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Training

TRAINING AND EDUCATION DEVELOPMENT IN SUPPORT OF THE INSTITUTIONAL DOMAIN

FOR THE COMMANDER:

OFFICIAL:

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History. This publication is a new U.S. Army Training and Doctrine Command (TRADOC) pamphlet.

Summary. This pamphlet contains specific guidance for the development of courses and lessons, with supporting information on analyses, assessment, job aids and graphic training aids, training support packages, and training and education management. It provides guidance and examples for organizations that develop training and education products for the institutional training domain. This guidance and these examples use the process and concepts outlined in the Army Learning Model (ALM) and support the development of both task-based and education-based lessons.

Applicability. The procedures outlined in this pamphlet apply to all Army organizations generating Army learning products used by the Active Army (AA), U.S. Army National Guard (ARNG), U.S. Army Reserve (USAR), and Department of the Army (DA) Civilians. When there is a conflict between this pamphlet and TRADOC Pamphlet 350-70-7 in the development of learning products for Professional Military Education (PME), the following organizations will have TRADOC Pamphlet 350-70-7 take precedence: Army War College (AWC), Command and General Staff College (CGSC), The Western Hemisphere Institute for Security Cooperation (WHINSEC), Warrant Officer Career College (WOCC), U.S. Army

Sergeants Major Academy (USASMA), and The Defense Language Institute Foreign Language Center (DLIFLC also known as DLI).

Proponent and exception authority. The proponent for this pamphlet is the U.S. Army Combined Arms Command (CAC), Training Management Directorate (TMD). The proponent has the authority to approve exceptions or waivers to this pamphlet that are consistent with controlling law and regulations.

Suggested Improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to the Commander, Combined Arms Center, Training Management Directorate (ATZL-CTD), Fort Leavenworth, KS 66027-2300; or electronically to usarmy.leavenworth.cac.mbx.leav-atn@mail.mil. Suggested improvements may also be submitted using DA Form 1045 (Army Ideas for Excellence Program (AIEP) Proposal).

Distribution. This TRADOC pamphlet is available only on the TRADOC website http://www.tradoc.army.mil/tpubs/.

Summary of Change

TRADOC Pamphlet 350-70-14
Training and Education Development in Support of the Institutional Domain

This pamphlet, dated 27 March 2015-

o provides "how to" guidance for institutional domain training and education product development and management using the analysis, design, development, implementation, evaluation process (throughout).

o implements the Army Learning Model using guidance and examples (throughout).

o provides various product formats, checklists, and supporting information which support the developer in producing quality institutional training and education products (Appendices).

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Chapter 1
Introduction

1-1. Purpose
This pamphlet provides detailed guidance for producing institutional training and education products in support of U.S. Army Training and Doctrine Command (TRADOC) Regulation 350-70. It uses the instructional system design (ISD) model based on the analysis, design, development, implementation, and evaluation (ADDIE) process. Personnel from training proponent organizations, Centers of Excellence (CoEs), and schools are the primary audience for this pamphlet. The institutional domain includes initial military training (IMT), professional military education (PME), civilian education system (CES), and functional training for Soldiers and Department of the Army (DA) Civilians.

1-2. References
Required and related publications and referenced forms are listed in appendix A. Referenced links can be found in the glossary and on the Training and Education Developer Toolbox (TED-T) website. These include links to civilian educational references.

1-3. Explanation of abbreviations and terms
Abbreviations, acronyms, and terms used in this pamphlet are found in the glossary. TED-T also contains a glossary of terms supporting TRADOC Regulation (TR) 350-70 and Army training and education development.

1-4. Scope
This pamphlet provides guidance for the generating force to create, revise, and manage institutional learning products for use by Army training and education proponents; an Army training and education overview with relationship to the Army Learning Model (ALM); and a description of the ADDIE process. This guidance primarily addresses analyzing, designing, and developing courses and lessons, with additional direction for individual critical task lists (ICTLs), lesson plans, learning assessments, job aids, graphic training aids, training circulars and training support packages (TSPs). The evaluation of products is covered to a limited extent. Finally, the pamphlet briefly discusses management and resources for the aforementioned products.

1-5. Army learning policy and systems overview
The Army learning policy and systems approach is a disciplined, logical approach to making collective, individual, and self-development instructional decisions for the Army. The goal of the Army learning policy and systems approach is to support the Army's mission by ensuring Soldier readiness. This instruction must be rigorous; relevant to units, Soldiers, civilians, and leaders; and conducive to safety and environmental protection.

1-6. Institutional learning processes and products

a. This pamphlet briefly describes institutional domain processes and products in this paragraph, then details them in subsequent chapters. The analysis processes described are those used for determining the institutional products needed and/or product design and

development. These products include ICTLs, courses/phases, modules, TSPs, and lesson/lesson plans. Institutional products are being transformed from a paper-based system to automated systems to improve effectiveness and efficiency. This transformation requires the developer to use the Combined Arms Center (CAC)-approved automated systems for delivering these products to institutions and the operational force.

b. ICTL. An ICTL is the list of individual critical tasks that job incumbents must perform to successfully accomplish their missions and duties. Each proponent's critical task and site selection board (CTSSB) develops the ICTL from a list of all tasks identified in a job analysis. A CTSSB is held every 2 to 3 years or as major changes to doctrine, organization, equipment, or a job occur. The individual critical tasks are the foundation of lessons and lesson plans. TR 350-70 and TRADOC Pamphlet (TP) 350-70-1 cover job analysis and development of ICTLs in greater detail.

c. Course. A course is a complete series of instructional units (phases, modules, and lessons) identified by common title and number. A course contains critical tasks or educational requirements to qualify a jobholder for a specific Army job or function. Examples include military occupational specialty (MOS)/area of concentration (AOC) skill level, skill qualification identifier, additional skill identifier (ASI), language identifier code (LIC), and skill identifier. Chapter 6 provides detailed information on course design and development.

(1) Phase. A phase is a major part of a course that may be taught at different locations. Phases are required to segment a course because of time, location, equipment, or facility constraints; or delivery options such as distributed learning (DL), resident, or any combination. For resourcing purposes, a phase is an instructional unit identified by a common course title and number consisting of critical tasks or educational requirements constructed as a portion or segment of a course.

(2) Module. A module is a group of related lessons that promotes efficiency in the course structure. In rare cases a module may be comprised of only one lesson based on a single terminal learning objective (TLO).

d. Lesson. A lesson is a segment of instruction that facilitates the accomplishment of learning step activities that lead to a specified TLO. During a lesson, learners are taught a particular subject or how to perform a particular activity. A lesson provides the instructional content for a lesson plan. Chapter 7 contains detailed information on lessons.

e. Lesson plan. The lesson plan is the detailed development of content and resources used by instructors/facilitators to execute the instruction prescribed in one lesson within the prescribed time limits using the specified resources. A lesson plan supports one lesson so lessons can easily be shared across the Army to support additional modules, phases, and courses. Chapter 7 provides information on lesson plans.

f. Learning assessments. A learning assessment is the measurement of learning by an individual. Assessment of a learner is often accomplished through a test of whether or not skills, knowledge and/or performance have been attained. Chapter 8 covers learning assessments.

g. Supporting products. Supporting products discussed in this pamphlet include job aids, graphic training aids (GTAs), and training circulars (TCs). A job aid is a supporting product that can be a checklist, procedural guide, decision table, worksheet, algorithm, or other device used as an aid in performing duty position tasks or skills. It gives directions and signals when to take action. A job aid is also called a job performance aid. A GTA is a product created to enable trainers to conduct and sustain task-based training in lieu of using extensive printed material or expensive equipment. GTAs may also increase performance during on-the-job training or as job aids. A TC is a publication (paper or computer-based) that provides a means to distribute training information that does not fit standard requirements for other established types of training publications. Chapter 9 provides guidance for these supporting products.

h. TSP. A TSP is a complete, exportable package integrating instructional products/materials and information necessary to instruct one or more tasks or competencies. The contents of the TSP will vary depending on the number of lesson plans included. A TSP is made up of a cover sheet, administrative instructions, and complete lesson plans. Chapter 10 provides details on TSPs.

1-7. Army learning policy and systems and the analysis, design, development, implementation, evaluation (ADDIE) process

a. The purpose of the Army learning policy and systems is to regulate practices in effective learning management and to specify required enabling systems. It also supports implementation of the ALM through Army-wide standardization of training and education content development practices. Learning content will remain relevant through the use of this process.

b. The Army's ISD model emphasizes the ADDIE process. Leaders, course managers, training developers, and instructor/ facilitators at all levels must comprehend the ADDIE process and the Army's overarching ISD model. The Army is intentionally moving toward an integration of training and education in order to focus on student learning rather than institutional training.

c. The ADDIE process provides for effectiveness and efficiencies by developing continuous awareness of the relationships among the component parts, rather than a sequential and linear approach. The five phases of ADDIE enable the creation of integrated, mission essential products that support any type of learning and professional growth. ADDIE is the basis of a systematic, cyclic, iterative approach to conceiving, planning, organizing, and documenting all unit and individual learning products. Developing institutional domain learning products requires awareness that the five ADDIE phases can be repeatedly applied at many levels, on a broad or narrow scope. Each ADDIE phase may be

entered individually when needed to revise the product. A developer must determine at what point to enter the process and ensure the learning product is produced efficiently and effectively.

(1) The analysis phase is used for defining learning requirements and the ways to measure success. Conducting a thorough analysis is essential for making training/instruction as relevant as possible. Analysis provides information about what skills or knowledge need to be trained or learned, the conditions under which the skills should be performed or the knowledge used, and the standard of performance that must be achieved. The results of analysis form the basis for creating and/or revising learning products. During analysis, a developer primarily focuses on comprehending the expected outcome of the development efforts while determining what information to draw upon. In determining the need for a new or revised learning product, the triggering circumstance may come from a variety of sources in the form of a problem to be resolved. Once the circumstance is provided, the developer must draw upon relevant information to create a new learning product or revise an existing learning product. The primary analysis processes used to identify the learning products to be designed (revised or created), developed, implemented, and evaluated are needs analysis, mission analysis, target audience analysis, and job analysis. To successfully create a product that meets all requirements at the appropriate level, the developer must maintain focus on the learning objective(s), with approved course outcomes and general learning outcomes (GLOs).

(2) The developer moves into the design phase after the problem is analyzed. In the design phase, the developer must identify the objective(s), which vary according to the type of instruction to be implemented. Once the developer confirms the learning objectives with the proper authority, the developer plans what the training/instruction should look like when it is complete, and the context in which the task or learning will successfully occur. The goal is to create a learning situation that helps people move from what they already know to gaining mastery of the new material. In the design phase, the developer determines learner assessment methods, lesson sequence, methods of instruction, media and/or other criteria needed for learning.

(3) The development phase involves translating the previously determined design plan into instruction and/or instructional products. The developer chooses the structure and methods to form a comprehensive strategy to help the intended audience achieve the learning objectives. The development strategy includes identifying all materials that support the implementation of a learning product. All steps for development of new institutional learning products are included in this pamphlet or further illustrated through links to external sources. Once institutional products are identified, designed, and developed, appropriate management processes are needed to implement and evaluate these products.

(4) The implementation phase is the execution of the training/education. Training/education is implemented after the learning product has been designed, developed, validated, and formally approved for use. Each proponent institution develops detailed standard operating procedures to meet instructional needs and resources for implementation.

(5) Evaluation is a continuous process that starts during the analysis phase and continues throughout the life cycle of the ADDIE process as well as the life cycle of each learning product. The evaluation phase consists of both formative and summative parts.

(a) Formative evaluation judges the ability of the learning product(s) to achieve the desired outcome/objective. This is a check-on-development to control the quality and implementation of learning products.

(b) Summative evaluation usually occurs after completion of the ADDIE process, and determines whether the learning product development and implementation meet established Army and center/school standards on a program level and thereafter on the job itself. Gaps in summative evaluation can be resolved with constructive and corrective feedback.

Note: Evaluation is a function of the Army's Quality Assurance (QA) Program; Army Regulation (AR) 350-1 as well as DA and TRADOC policy memorandums and implementing guidance contain specific policy for the QA Program. QA Program evaluation covers much more than the ADDIE process: Army accreditation standards assess functions that cross all doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) domains. QA Program internal evaluations, pre-accreditation self assessments, and accreditations assess the DOTMLPF functions against Army accreditation standards, to include evaluation of ADDIE processes and learning products in accordance with AR 350-1, TR 350-70, TP 350-70-4, and procedures delineated in this pamphlet.

(6) Although the ADDIE phases often build upon each other, remember:

(a) The normal training development (TD) process for a new training requirement begins with a perceived training requirement and proceeds with job and critical task analysis, design, and development of the training/education product.

(b) ADDIE phases can be entered individually as needed for revisions, creating an iterative process.

(c) Evaluation permeates all ADDIE phases and ensures all training/education and supporting learning products are effective in producing trained units, organizations, Soldiers, leaders, and DA Civilians.

(7) ADDIE process management overview. Leaders, course managers, training developers, and instructor/ facilitators at all levels must ensure compliance with the ADDIE process to develop learning products and prepare for implementation. All those involved must:

(a) Create and maintain appropriate validation and assessment plans.

(b) Provide supervision of learning product development and provide team assistance when needed to ensure the work at hand flows smoothly and efficiently.

(c) Meet timelines and milestones of the project while maintaining quality.

(d) Ensure the entire ADDIE process operates within a given set of resources. The analysis phase of ADDIE determines availability of, constraints on, and allocation of resources for the courses and learning products being developed.

(e) Maintain quality; establish internal quality controls throughout the ADDIE process.

Note: While the creation or revision of each product goes through the phases of ADDIE, the phases do not directly correspond to the five stages of workflow in the automated Training Development Capability (TDC). The ADDIE process occurs in the first two work stages (proposed and analysis) of the TDC workflow.

d. The Army's ADDIE process allows for the organization, development, and management of learning programs and products. This process organizes all course and curriculum development activities to ensure instruction accomplishes the institution's educational purpose. Chapter 11 presents management guidance for institutional domain learning products. It also defines the CAC's role for managing learning product requirements. Additionally, it notes proponent guidance for approval and distribution of institutional domain learning products.

1-8. Regulation and pamphlet relationships

a. TR 350-70 consolidates policy for Army-wide production, implementation, and evaluation of Army learning products across the institutional, operational, and self-development training domains. This regulation and its associated pamphlets fulfill many of the requirements identified in AR 350-1 for the commanding general, TRADOC, in his role as the proponent for the Army training and education development process.

b. The 350-70 series of pamphlets provide "how-to" guidance on training and education development in the training domains, as well as for various training and education management control processes. Information found in the pamphlets becomes regulatory only when specifically identified as such in TR 350-70. This pamphlet provides guidance for the creation, revision, and management of institutional learning products.

c. Published pamphlets are maintained in electronic format on the TRADOC website and mirrored on the TED-T website in a format that allows for easier research and navigation of the information. TED-T also contains procedural job aids, product templates, product samples, information papers to assist in completing learning products, and links to various external professional education sources.

Chapter 2
Proponent Responsibilities and Support of Institutional Training and Education Products

2-1. Introduction

a. TRADOC is the Army's proponent for the training, education, and leader development process and is the accrediting authority for Army institutions conducting training and leader development.

b. CAC is the proponent for Army training and education development and critical operational lessons learned (TR 10-5-4). As such, CAC is responsible to support and integrate Army training and education across all cohorts in support of Army force generation (ARFORGEN). Additional command and staff responsibilities are outlined in the TR 10-5 series, TR 350-70, and TP 350-70-16.

c. Training Proponents:

(1) Develop courses based on established training and education needs, goals, requirements, and objectives as well as the duties, responsibilities, and functions their graduates will be assigned.

(2) Provide progressive and sequential training and education to Soldiers, leaders, and DA Civilians.

(3) Coordinate development of all institutional products, training enablers, and systems with CAC to ensure that tasks and live, virtual, constructive, and gaming environments have been considered and integrated for the most cost effective means of training.

(4) Analyze, design, develop, implement, and evaluate learning products for Soldiers and DA Civilians.

2-2. Training proponent information and identification (ID) numbers

For the latest TRADOC training proponent school codes relating to Army training and education functional areas, see TP 350-70-16 on the TED-T website.

2-3. Institutional training and education system

The Army institutional training and education system encompasses Army centers and schools that provide initial military training and subsequent functional and PME for Soldiers, leaders, and DA Civilians throughout their careers.

Note: For purposes of this pamphlet, training development and training developer are inclusive of training and education.

2-4. Mandatory training in institutions
Mandatory training in institutions consists of Headquarters, Department of the Army (HQDA)-selected general subject areas in which individual Soldiers and DA Civilians must be proficient to perform satisfactorily in a military organization, regardless of branch/career field or rank/grade. Mandatory training requirements are limited to those subject areas directed by law and HQDA. The HQDA, Deputy Chief of Staff (DCS), G–3/5/7, maintains centralized control over mandatory directed training requirements and reviews them biennially. AR 350-1, appendix G, produces the most current list of mandatory training.

2-5. Foreign disclosure (FD) restriction statements
Apply appropriate FD restriction statements on the cover of every Army learning product (and component) that contains classified military information or controlled unclassified information. There must be one FD restriction statement for the learning product as a whole, one for each lesson, and one for each document used as a resource for the learning product. Refer to AR 380-5, AR 25-55, AR 380-10, DA Pam 25-40, and TR 350-70 for more information on restriction statements.

2-6. Copyright/proprietary materials/intellectual property

a. Intellectual property is defined as a product of the human mind which is protected by law. It includes, but is not limited to patents, inventions, designs, copyrights, works of authorship, trademarks, service marks, technical data, trade secrets, computer software, unsolicited inventive proposals, and technical know-how. The intangible rights in such property are described as intellectual property rights (AR 27-60).

b. Training and education developers and instructors/facilitators have the responsibility to:

(1) Ensure proper handling, use, and distribution of copyrighted material.

(2) Maintain an audit trail of all source data, i.e., page, paragraph, document title/number, date of document.

c. Copyright and proprietary material can be used in the development and implementation of training programs, products, and materials provided the appropriate written authority/permission is obtained from the property owner prior to using the material. As a general rule, it is a violation of law to use copyright and proprietary material without this permission. Use of a copyrighted work by the Army without permission of the owner must be approved by a patent and copyright attorney from the U.S. Army Legal Services Agency. Unless it is specified in the agreement with the owner that you have unlimited usage/distribution rights, proprietary material cannot be used unconditionally. This applies to, but is not limited to, written material, graphics, video, development programs, and interactive multimedia instruction (IMI) products. Training and education developers must:

(1) Determine if the material to be used in the training is copyrighted or proprietary. Proprietary or copyrighted materials will contain an appropriate restrictive legend or copyright notice. The copyright mark or restrictive legend would appear in the front of any copyrighted/restrictive text.

(2) Include the Staff Judge Advocate in staffing procedures prior to buying any proprietary materials for inclusion in training products/materials and consult with them to:

(a) Review/determine current rights for the use of existing proprietary materials for training purposes and the need to obtain approval for use in courseware.

(b) Review any site license purchased or about to be purchased and render a decision on usage rights.

(3) Acquire acquisition of the rights necessary to maximize investment of proprietary programs/materials before designing and implementing the training program. This includes:

(a) Obtaining royalty-free rights to use, duplicate, and disclose data for government purposes.

(b) Obtaining unlimited rights to the IMI computer-based instruction (CBI) to the extent authorized by the Federal Acquisition Regulation.

Note: Violation of site license agreements may have serious legal consequences.

(c) Ensuring life cycle availability of any authoring program.

(d) Obtaining all associated software libraries and materials necessary to design/revise the training product, for example, IMI or CBI.

d. DA Pam 25-40 identifies limits to the exclusive right of copyright owners.

e. Review all printed materials which have been or are to be placed in digitally delivered formats to determine if any copyright protected material is contained. If any copyright protected material is present, contact the owner of the material and request permission to use the material in a document or program placed on the Internet or delivered by other digital means (examples include CD-ROM and DVD). The original copyright release granted for *printed* materials is not sufficient as permission must be obtained for the specific use of the material delivered via the Internet or by other digital means (CD-ROM, DVD). Publishing or disseminating copyrighted digital material without proper permission is a violation of the Digital Millennium Copyright Act.

(1) If permission is granted, the permission document must be placed on permanent file.

(2) If permission is not granted, the material must be extracted from the document before it is placed on the Internet.

(3) Maintain a record copy of any document that grants permission/authority to use the proprietary material.

Note: Helpful copyright internet sites include the Copyright Clearance Center, the U.S. Patent and Trademark Office, and the U.S. Copyright Office. Links can be found in the glossary.

2-7. Training development management

a. A proponent will only revise or develop institutional products for which they are the assigned proponent. The development or revision of non-proponent products will be coordinated with and approved by the designated proponent in order to maintain consistency in institutional products.

b. Proponents may choose to outsource TD tasks through contracting measures**.** It is the responsibility of the contracting officer's representative (COR) to ensure that the requirements set forth in this regulation are established as a performance measure in the description of work, and ensures these requirements are applied to all deliverables prior to the government's acceptance of any product.

2-8. Interfacing with other Army systems and processes

Learning product managers need to have a high-level of knowledge of the learning product development processes, the automation tools available for learning product development, and how these interface with other Army systems. TDC is the primary automated system used by TRADOC schools and centers to create, edit, and manage all training and education products that support both the institutional and operational forces. TDC is one of several very important training- and resource-related systems including, but not limited to: Requirements Determination and Acquisition Process, Manpower and Personnel Integration; Planning, Programming, Budgeting, and Execution System (PPBES); training requirements analysis system (TRAS); the GTA program; system training plan (STRAP) Writing Tool (SWT); and the Army Training Management System (ATMS). Together, these systems provide the capability for ensuring DOTMLPF-P requirements are fully implemented from identification of a gap to implementation of the training and/or education solution. TP 350-70-13 contains more information on system training integration.

2-9. Application of the Army Learning Model (ALM)

The ALM is the operational term for a continuous adaptive learning model described in the U.S. Army Learning Concept for 2015 (ALC 2015), (TP 525-8-2, change 1, dated 6 June 2011). The ALM establishes a framework that will transform the Army's individual learning methods and processes in support of the ALC 2015 principle of developing adaptable Soldiers and leaders. TRADOC schools are incrementally implementing the ALM using advancements in learning sciences to change instructional strategies that create more facilitated, collaborative learning events to engage learners, employ digital learning content,

use relevant operational scenarios, and capitalize on blended learning approaches. TRADOC is also in the process of transforming the skills of staff and faculty personnel through new development programs, adapting curricula development, and beginning analysis of course resource models to align with the ALM. TRADOC will continue to develop and adapt its governance, delivery, development, instruction, knowledge management, quality assurance, planning, and resourcing processes and models to implement the ALM. TR 350-70 provides ALM instructional guidelines. Training and education developers should incorporate these guidelines during the ADDIE process to create rigorous, effective, and relevant learning products across the career span.

a. TP 525-8-2 CH1 provides nine 21st Century Soldier Competencies to direct the professional development of Soldiers and civilians throughout their careers. These competencies are: character and accountability; comprehensive fitness; adaptability and initiative; lifelong learner; teamwork and collaboration; communication and engagement; critical thinking and problem solving; cultural and joint, interagency, intergovernmental, and multinational competence; and tactical and technical competence.

b. GLOs are statements of essential knowledge, skills, abilities, and attributes resulting from training, education and experience at each level along a leader's career. GLOs are provided to assist schools, unit leaders, and individuals to focus learning activities on developing leaders with the 21st century competencies.

c. GLOs vary by cohort and echelon, and are progressive throughout an individual's career. Cohorts include IMT, NCOs, warrant officers, commissioned officers, and DA Civilians. Echelons align with the levels in the PME system or CES for each cohort.

d. Training developers, course managers, and leaders must ensure course outcomes achieve the GLOs that apply to a specific course. Not all the GLOs will be applicable to every course outcome.

e. Training developers must ensure that any GLOs included in a course are properly assessed and aligned with the course outcomes and TLOs. objective.

Note : TP 525-8-2 CH1 describes a competency as a cluster of related knowledge and skills that affect a major part of an individual's job (a role or responsibility), that correlates with performance on the job, that can be measured against accepted standards and that can be improved via training and development.

Chapter 3
Operational Force Drivers of Generating Force Learning Products

3-1. Introduction

a. This chapter provides information regarding the relationship between the generating force's learning products and operational Army training requirements. The chapter introduces the ARFORGEN cycle, details the needs analysis process, discusses analysis processes for learning products, and notes the requirement to include safety, risk management, and environmental protection in all training and TD.

b. The operational force consists primarily of Army units whose main purpose is to conduct or support unified land operations. ARFORGEN is a three-phased cycle that structures the progression of increased unit readiness over time and results in recurring periods of availability of trained, ready, and cohesive units. The *reset*, *train/ready*, and *available* force pools provide the framework for the structured progression. Each force pool is defined by designated unit activities, capability levels, and the period of time allocated to each force pool. The Army uses the force pools in addition to mission requirements to prioritize resources over time and synchronize unit manning, equipping, resourcing, and training. To learn more about ARFORGEN, see AR 525-29.

c. Proponents primarily develop training and education to support unit readiness based on the force's needs as well as their institutional goals and objectives. The needs analysis and mission analysis processes identify the force's needs. The Army must train and educate Soldiers, leaders, and units to perform under realistic and stressful conditions and to survive and win in the full range of military operations. This realistic training must ensure the well being of the Soldiers being trained and protection of the environment.

3-2. Needs analysis

a. A needs analysis identifies gaps between current and required Army capabilities or performance. Actual or perceived performance deficiencies may be in any area of DOTMLPF. Training or education is not always the solution, although it may sometimes be part of a combined solution. Needs analysis may also identify training/education that is no longer needed. Needs analysis questions include:

(1) Is there a performance problem? If so, what is it?

(2) What is the root cause of the performance problem?

(3) Is there a DOTMLPF solution other than training or education that mitigates the root cause?

(4) Is current training or education based on something other than an identified performance problem, such as changes in doctrine, command directed training and education, new equipment, or critical operational lessons learned?

b. A needs analysis results in the following outputs:

(1) Training and education solutions or improvements, as applicable.

(2) Recommendations for non-training solutions, as applicable.

(3) Learning product development requirements.

c. Figure 3-1 depicts the flow of information in the needs analysis process.

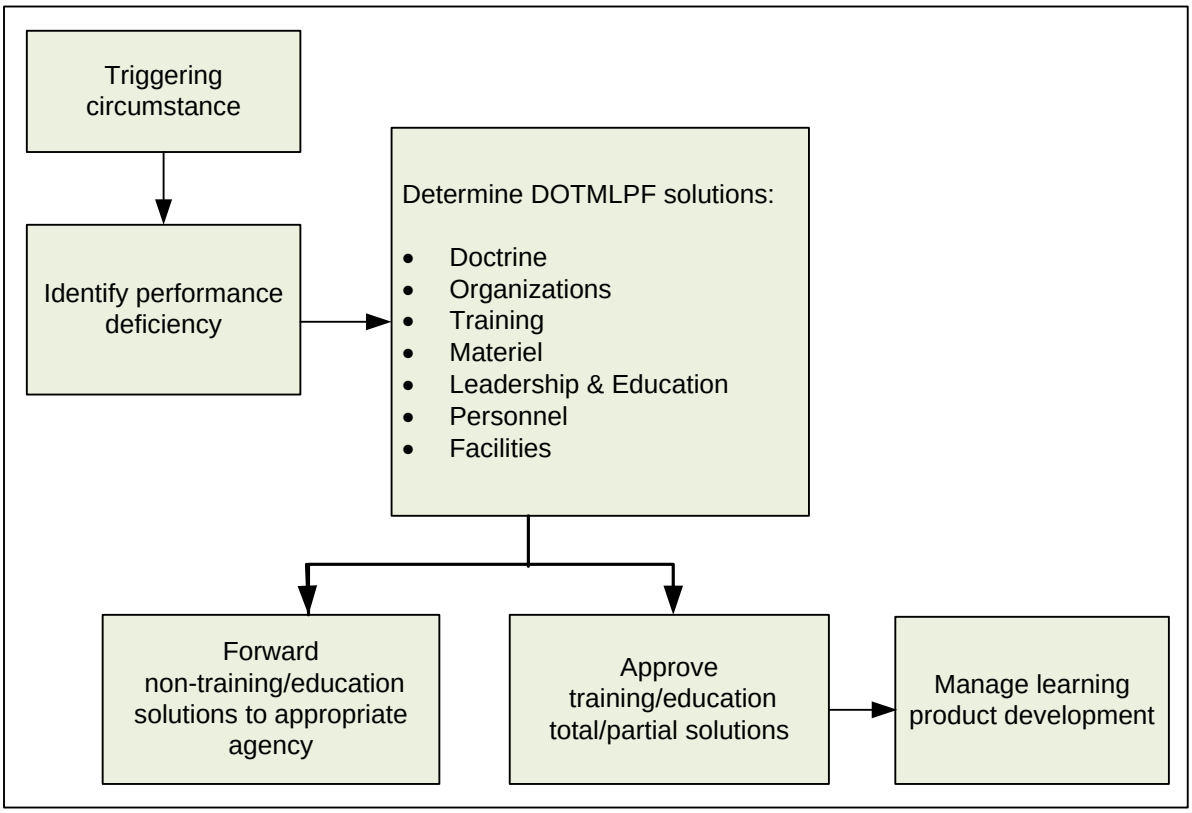

Figure 3-1. Needs analysis process

d. Needs analysis triggering circumstances may be presented to developers in formal or informal reports and may originate from a wide variety of sources, such as:

(1) Evaluation findings. Evaluation is a continuous process to identify training and education efficiencies and deficiencies that feed back into the development cycle.

(2) Field/other input. Feedback from personnel assigned to operating force units is essential to identify training and education needs. Other excellent sources of unit feedback include the combat training centers (CTCs) and threat managers from the Army's CoEs. Additionally, the Center for Army Lessons Learned (CALL) plays a vital role in the identification of potential training deficiencies.

(3) Long-range plans and new capabilities. Inputs to consider during analysis for training or education development requirements include: TRADOC Long-Range Training Plan, the Army Long-Range Planning Guidance, the ALM, The Army Plan, warfighting concepts and experiments, training and education strategies, and advanced concept technology demonstrations.

(4) Directed training. Common core and shared training requirements occur when higher commands, senior officers, laws, and regulations direct training of common military and other subjects. This includes training directed by DA and Army commands. In these cases, HQ TRADOC directs responsible officials and proponent schools to:

(a) Follow the needs analysis process to determine specific requirements.

(b) Determine if critical tasks or awareness training and education is required.

(c) Determine exactly how and where training and/or education will occur.

(d) Recommend doctrine changes. Doctrine changes usually require changes to learning products.

(e) Recommend organizational changes. Organizational restructuring such as combining two MOSs can create a learning product development requirement.

(f) Develop new or improved equipment/systems. A materiel or system change usually results in requirements to modify existing learning products.

(g) Review legal or regulation changes. New or revised laws and regulations may establish the requirement to create or modify learning products. Developers must keep current on their knowledge of law and regulation changes that affect the proponent areas of responsibility.

(h) Review data from the CALL or CTCs.

e. Identify and describe the problem(s) in exact terms as possible to determine a solution. Describe the problem without attributing a cause to it or attributing it to a solution (DOTMLPF) domain.

f. Acquire related documentation and data. Check the Army Publishing Directorate list of electronic DA-level publications on the Army Publishing Directorate website to verify currency of references. Figure 3-2 identifies documentation and data source examples.

• Task analysis data	• Observations
• Operational concepts	• Center for Army Lessons Learned data
• Capability issues	• Regulations and pamphlets
• Threat	• Evaluation reports
• Doctrine	• Related reports and/ or interview data
• Materiel acquisition	• Command directives and documents
• Table of organization and equipment	• Table of distribution and allowance
• Subject matter expert interviews	• Learning products

Figure 3-2. Examples of needs analysis documentation and data sources

g. Determine the requirements.

(1) Analyze documentation and data to identify requirements such as task standards and legal or regulation requirements. For example, Soldiers must be able to don a protective mask in less than nine seconds.

(2) Document whether or not there is a required sequence of performance or whether a cue triggers the required performance (document the nature of the cue). For example, the cue to don the protective mask is either a verbal order or another sign indicating the presence of chemical contaminants.

h. Describe the current situation.

(1) Identify the problem in terms of learning outcomes. A learning outcome is a statement that indicates the level and type of competence a learner will have at the end of a course. Identify who or which organization is not meeting the requirement. Document the problem in terms of how these outcomes are addressed through learning products or programs.

(2) Document the problem in terms of collective and/or individual tasks, and document problems in terms of any task standard that Soldiers cannot meet. Identify who or which organization is not meeting the requirement. Include:

(a) Enlisted/warrant MOS/ASI/skill qualification identifier.

(b) AOC/functional area/skill identifier.

(c) DA Civilian career field/program.

(d) Skill level/grade.

(e) Common Soldier tasks, common skills, and shared tasks.

(f) Unit (table of organization and equipment (TOE)/table of distribution and allowances (TDA) number, unit identification code, and name).

(3) Describe the current situation using the same descriptors used to describe the requirement. For example, Soldiers in MOS 11B, 11C skill levels 2-4, and officers AOC 11 (all levels) take 22 seconds to don a protective mask.

i. Identify the problem by describing the difference between the requirement and the current situation. For example, Soldiers are taking more than twice the required time to don their masks: 22 seconds (current situation) – 9 seconds (requirement) = 13 seconds (gap).

j. Follow up immediately on all problems regarding safety, security, or environmental issues.

k. Identify the major causes or combination of causes of the problem. It is essential to precisely define and clarify the identified problem in order to develop ideas for solutions and courses of action. Figure 3-3 shows several possible sources for problems related to environmental and individual issues. To identify the cause of the gap developers must collect supporting data. This requires:

(1) Compiling data.

(2) Comparing data to identify the causes(s) of the problem.

Environmental	**Individual**
• Tools/Resources • Incentives/Rewards • Policies/Procedures • Information/Feedback • Management	• Skills • Knowledge • Motivation (Confidence, Value) • Capability

Figure 3-3. Potential sources of needs analysis problems

l. Identify the responsible DOTMLPF area for correcting the problem. Table 3-1 contains an example.

Table 3-1
Doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) problem example

Problem	DOTMLPF domain	Possible causal area
A brigade has a requirement to deploy within 24 hours after receiving the deployment order. Exercises have shown the average time to execute the deployment is 36 hours (12-hour performance gap).	Doctrine	Soldiers are following doctrinal loading procedures that take significantly longer to complete than other updated methods that are not reflected in doctrine.
	Organization	The sustainment battalion is at 50 percent strength.
	Training	75 percent of the pallets do not pass inspection the first time they are loaded. Soldiers do not know how to load equipment and material onto pallets correctly.
	Materiel	The unit does not have forklifts to load heavier equipment onto trucks for movement to the loading facility. Groups of Soldiers load this equipment manually and require significant time to load the equipment safely.
	Leadership and education	Leadership did not take action to correct the personnel issue or space limitations.
	Personnel	Delays are caused because Soldiers wait for pallets to be inspected. Are the delays caused from lack of Soldier initiative or is it a workforce deficiency issue?
	Facilities	Space limits in the pallet loading facility prevent multiple companies from simultaneously loading pallets.

m. Identify and analyze courses of action.

n. Recommend the best solutions and alternatives to correcting the problem. Document and justify the determination. Turn the information over to the appropriate command authority. All are tentative solutions until the appropriate command authority works the issue.

(1) Recommend solutions and alternatives (complete or partial) for non-training/education problems. Although these might not necessarily be the developer's area of expertise, a thorough study of the problem could reveal deficiencies in these areas.

(2) Recommend solutions and alternatives for training and education deficiencies. Keep in mind that the solution is not always training and education. Other solutions may be more effective and less costly. Incorrectly applying a training and education solution to a deficiency does not correct the deficiency, it wastes time and money.

(3) Consider combination solutions. Fixing the problem may require a combination of actions, or a partial training and education solution.

o. Submit courses of action and recommended solutions (including integration of critical operational lessons learned) to command authority for approval. Failure to communicate and effect or execute solutions results in continued problems. Write documents (such as decision papers and command briefings) in a way that concisely conveys the scope and nature of the solutions related to the problem.

p. Outline the training and/or education solution where the command authority can readily see the impact if it is not implemented. Depict the cost of failing to correct the problem.

q. Articulate the strengths and weaknesses of each possible solution.

r. Retain a copy of the needs analysis documentation for future reference.

s. After identifying training and education needs (whole or partial), document the specific learning products and components required to implement the solution. This includes identifying the product's name and number (if it exists, see Table 3-2), specifying what to accomplish, and determining the processes to employ or revise. The specific requirement could involve simply modifying a lesson, or it may involve conducting a job analysis, updating the individual task analysis, and/or redesigning a course. These requirements form the basis for determining development workload.

Note: Having requirements for training or education does not ensure the procurement of resources for development.

t. Submit workload requirements for approval to proponent’s approval authority prior to proceeding beyond the needs analysis.

u. Provide the approved requirement documentation to the appropriate proponent responsible for the training or education solution.

v. TR 350-70 outlines responsibilities for additional information on needs analysis.

Table 3-2
Learning product search procedure

Step	Actions
1	Select sources. Consult all possible sources to determine which are appropriate. Most proponent libraries have research librarians who can assist. Some possible sources include: • Existing course materials. • Instructors/facilitators and developers of previous versions of the course. • External and internal evaluation reports of previous versions of the course, such as student evaluations. • The Central Army Registry. • Defense Automated Visual Information System (DAVIS) and Defense Instructional Technology Information System (DITIS). • Publications and personnel from other federal agencies, industry and commercial sources, and colleges and universities. • Libraries, World Wide Web, and Internet.
2	Identify possible learning products and the learning objective(s) they support. Ask the following questions: • Do the learning products match the learning objective? If not, reject it. • Is the content at the appropriate level of difficulty and complexity for the target audience? • Are the learning products accurate, current, and free of error? • Are the learning products copyrighted? • Do the learning products address motivational factors and encourage active learning? • Are the learning products well-organized? • Are the learning products sequenced properly? • Will the learning products be meaningful and appealing to the students? • Is the reading level appropriate? • Can the available learning products be used in part, modified, or combined with other learning products to accomplish the desired goal? • Have the learning products been cleared for international officer or contractor use?
3	Evaluate and select initial learning products. • If using copyrighted material, work with the library to obtain permission from the publisher before using. It may involve a user fee. Determine if the fee is within the school's budget and if the material provides adequate benefit to justify the cost. • If the learning product being evaluated for possible use is labeled "limited to U.S. student only," "no foreign," or "no contractors," or if it is unclassified information from a classified source, its use must be cleared with the local security office. Coordinate and clear all learning products (including unclassified material) through local security office before distribution.
4	Document your research. Be sure to include classification, FD, and copyright information for any existing products selected.

3-3. Learning product analysis process overview
The Army's ADDIE process begins when a needs statement (or other triggering circumstance) identifies a training or education deficiency. If a needs analysis indicates a requirement for a new learning product, the next step is to perform a mission analysis and/or job analysis. If a needs analysis indicates a required change or modification in an existing learning product, then use the ADDIE process. The idea is that each analysis phase results in an end product, and each product goes through its own ADDIE phases. The various processes and products taken as a whole constitute the Army's instructional design system. Note that chapter 4 discusses job analysis.

3-4. Mission analysis

a. Mission analysis establishes unit/organization missions and identifies those collective tasks required for mission accomplishment. The outcome of mission analysis is the unit task list (UTL). The development of the UTL is outlined in TP 350-70-1.

b. The proponent commander/commandant or his/her designated O-6 representative responsible for the task(s) approves the UTL. UTLs are designed to increase Army readiness and mission accomplishment. See TP 350-70-1 for additional information on UTL approval.

c. The completed and approved UTL must be made available to the appropriate users and organizations for use in conducting the collective task analysis, and eventually the individual task analyses. Capturing analysis data from the ATMS and TDC is the preferred method of conducting the analysis. Automated systems provide some concrete outputs for several types of analysis—most notably mission analysis—and help in the maintenance of those outputs.

d. Mission analysis quality control (QC). Follow the guidance in TP 350-70-1 to ensure the quality of the application of the mission analysis process and the products developed. The training and education developer's or subject matter expert's (SME's) supervisor has overall responsibility for conducting a thorough, efficient, and effective mission analysis that identifies valid tasks. The supervisor keeps appropriate managers informed on mission analysis status and provides assurance that the mission analysis outputs are valid. Supervisors maintain the quality of the mission analysis products by continuously applying QC procedures. All individuals involved in the mission analysis are responsible for QCs over the process and products developed.

e. Mission analysis management. Completed and approved analysis data and information must be made available to appropriate users and organizations for use in designing and developing training products.

3-5. Safety and environmental protection

a. This section provides guidance for including safety, risk management, and environmental protection in TD products.

(1) Safety is a component of the protection warfighting function. Training and education developers and trainers must provide safe training to achieve force protection.

(2) Environmental protection. Training and education developers and trainers must plan, initiate, and carry out actions and programs in a manner that minimizes adverse effects on the environment. Refer to AR 200-1 and Field Manual (FM) 3-34.5 for additional information.

b. Safety and environmental responsibilities.

(1) Safety, risk management, environmental protection, and compliance are the responsibilities of commanders, managers, and individuals. Primary references for safety information are found in FM 5-19, DA Form 7566 (Army Composite Risk Management Worksheet), TR 385-2., and DA Pam 385-30 . Primary references for environmental-related risk information are found in FM 3-34.5

(2) TRADOC training proponents**,** training and education developers, trainers, and other subordinate personnel must design, develop, and implement realistic, viable training that:

(a) Does not unnecessarily jeopardize lives and equipment.

(b) Eliminates or minimizes the risks involved in relation to the training benefits.

(c) Includes controls to eliminate/reduce the risk/hazard.

(d) Prevents, eliminates, or minimizes environmental damage through personal or military action.

(e) Conserves and preserves resources.

(f) Complies with federal, state, and local environmental laws, regulations, and restrictions (for example, endangered species protection; oil and hazardous waste disposal).

(3) TRADOC training proponents**,** training and education developers, trainers, and other subordinate personnel must also integrate safety, risk management, and environmental protection considerations into training and training materials. Specifically, the proponent is responsible to:

(a) Include appropriate safety/risk/environmental protection statements, cautions, notes, and warnings in all training products.

(b) Identify the risk and assign a risk assessment code to every proponent lesson (resident and nonresident).

(c) Coordinate with and obtain approval from the appropriate branch safety manager for lesson plans and other training products that have safety and risk management issues, except training to be conducted wholly in a classroom environment and with a residual risk level of LOW (TR 385-2).

(d) Submit products with a residual risk level of Extremely High in accordance with TR 350-70, figure 5-3.

(e) Foster safe training and environmental protection by recognizing unsafe behavior and attitudes, making risk decisions, properly counseling individuals, and developing counter-measures to control, mitigate, or eliminate hazards during training.

(f) Participate on the Environmental Quality Control Committee as directed in accordance with AR 200-1.

Chapter 4
Job Analysis

4-1. Introduction to job analysis

Job analysis is the process used to identify individual tasks (including leader tasks). The output of job analysis is a total task inventory (TTI) for a specific job or skill set. A job is a collection of unique, specific, and related activities (tasks or skill sets) performed by a unique, defined set of personnel. Training and education proponents develop or approve training and education products for learning outcomes based on critical tasks and 21st Century Soldier Competencies. A CTSSB uses the TTI to create an ICTL for command approval. This ensures individual training that supports the accomplishment of unit wartime missions, mission essential task lists (METLs), and the full range of military operations.

4-2. The job analysis process

a. Proponents perform a job analysis on all new and existing jobs (MOSs/AOCs) or skill sets (ASI) that fall under their proponency. Job analysis is a minimum essential requirement before the development of individual training products. Job analysis outputs include: the job analysis survey, total task inventory, ICTL for a specific job or duty position (including task titles and task numbers), individual task performance data, collective to individual task matrix, initial training or education site selection, and CTSSB documents (including audit trail of all tasks not deemed critical by the board). A job analysis is conducted every 2 to 3 years, or whenever mission and collective task analysis, needs analysis, MOS consolidation, changes in weapons systems, new equipment requirements, technology updates, or other sources indicate major changes have occurred in the structure or content of the job or skill set. Start points for new and revised job analysis are as follows:

(1) New. Proponents must conduct a new job analysis when a needs analysis identifies a learning requirement to create a new job, merge or consolidate jobs, career field realignments, or divide a job into two or more jobs. New/updated mission or collective analysis data, new/updated contractor-produced analysis data, new job initiated by reorganization or consolidation, evaluation feedback, and other sources of data also trigger common learning requirements. The associated product/project manager provides new tasks associated with new materiel systems, to include software-enabled tasks, to support the job and task analysis process. Refer to TP 350-70-13 for specific guidance on new systems training and education development.

(2) Revision. Proponents must conduct a job analysis revision when there are major changes in the job and the tasks performed as part of the job. Major changes may be a result of unit feedback, new doctrine, new or improved systems/equipment, evaluation feedback, and/or lessons learned.

b. Job analysis should collect and document information to answer: what and how the student is expected to perform once trained, under what circumstances he is expected to perform, what tools he will have to facilitate the performance of his job, how he will be judged as having successfully completed his job, and what are the prerequisite skills and knowledge that a student must have prior to starting tasks associated with the job. For a more detailed explanation and examples, see the *HR Guide to the Internet: Overview* (link provided in the glossary and on TED-T). A job analysis checklist is provided in appendix B.

c. When the individual critical tasks are identified (through the CTSSB process) and approved by the training proponent commandant/commander, the job analysis process is complete. Figure 4-1 shows the activities involved in conducting the job analysis process.

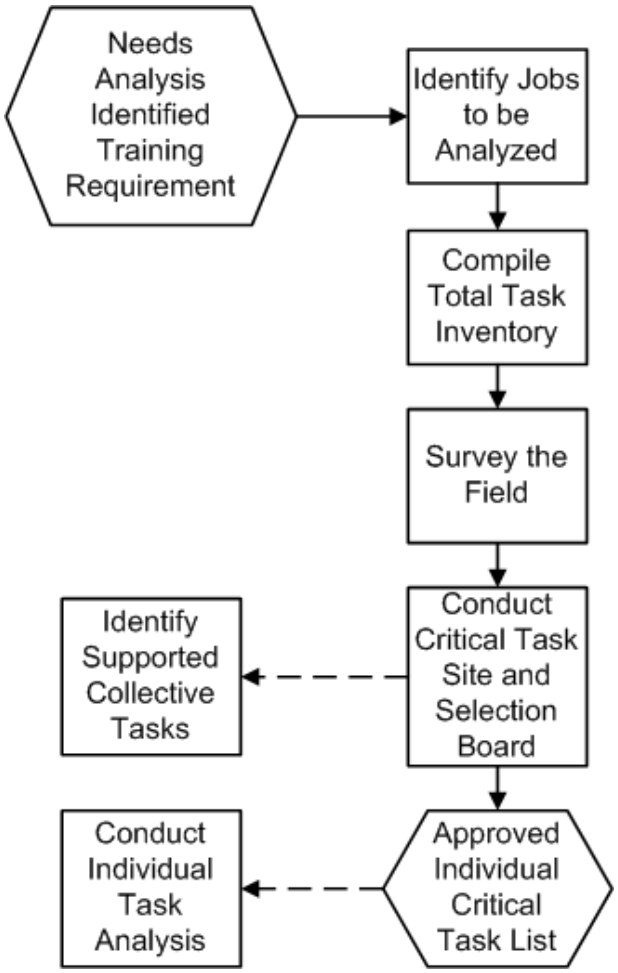

Figure 4-1. Job analysis flow chart

4-3. Individual task identification

The matrix in figure 4-2 shows an example of how to identify tasks during job analysis. When complete, the matrix will show all tasks required to perform a job

Task	Jobs		
	88M10	88M20	88M30
pppp-xxx-nnn1		X	
pppp-xxx-nnn2	X	X	X
pppp-xxx-nnn3			X
pppp-xxx-nnn4	X	X	
pppp-xxx-nnn5		X	

Key: pppp* (proponent code) – xxx (task type) – nnnn (unique number assigned by proponent)

*Proponent code can be three or four digits

Figure 4-2. Sample task identification chart

4-4. The total job task inventory

a. A total job task inventory is a complete list of tasks associated with a job. Steps in a total task inventory include conducting a job familiarization, identifying tasks from SME interviews, and extracting tasks from references, mission analysis data, and collective task analysis. Figure 4-3 lists some possible references to use for gathering tasks to compile the total job task inventory. The total task inventory is used as the starting point when conducting a CTSSB.

Individual Task Sources

- Laws and regulations
- Army doctrine publications (ADPs)
- Army doctrine reference publications (ADRPs)
- Field manuals (FMs)
- Techincal Manuals
- Army techniques publications (ATPs)
- Subject matter experts (SMEs)
- Evaluation data
- Mission analysis
- Task analysis
- Center for Army Lessons Learned (CALL)
- Centers of Excellences (CoEs)

NOTE: Total task inventory is compiled from many sources.

Figure 4-3. References for compiling a total task inventory

b. Enter each task into a spreadsheet and assign a unique, four-digit, temporary identification number (not a critical task number) to each task. Provide as much task detail as needed to make them clear to field (survey) and CTSSB members. The CTSSB members vote using the spreadsheet data. The temporary numbers make it easier to locate the tasks.

4-5. Identifying potential critical tasks

a. Establish criteria for critical task selection. Choose a critical task selection model to apply statistically valid task selection data to identify critical individual tasks. A task selection model is a conceptual model in which statistically valid task selection criteria are applied to identify individual tasks critical to the performance of a specific job. There are a variety of models available for use. Some examples of task selection models are the Difficulty-Importance-Frequency (DIF) Model, the Probability of Task Criticality Model, and the Training Emphasis Model. Refer to TED-T for best practices.

b. Construct/coordinate/conduct the survey. A jobs survey is key to the identification of individual critical tasks. Conduct a survey and collect task performance data from Active Army (AA) and Reserve Component (RC) Soldiers in field units for a specific job or for an entire MOS/AOC.

4-6. Critical task and site selection boards (CTSSB)

a. The CTSSB is responsible for recommending additions, changes, and deletions to the TTI. The CTSSB members determine the critical tasks for their MOS based upon their expertise and the job analysis survey data. The CTSSB also prioritizes tasks for training. The chairman is a SME who only votes in the event of a tie. The chairman convenes the individual CTSSB, ensures adequate AA and RC representation, and selects board members (approximately 5-7 SMEs -). The chairman then leads the discussions on critical task selection and advises the board on procedural matters. To serve on this board, SMEs should be one skill level higher than the job for which the tasks are being recommended. Training and education developers are non-voting members who advise the board on educational, analysis, and procedural matters to include explaining the:

(1) TD process, especially the job analysis.

(2) Task and critical task definitions.

(3) Task performance data.

(4) Task selection model.

b. SMEs are voting members that:

(1) Recommend changes; for example, rewording, combining, additions, or deletions of tasks to the total task inventory.

(2) Provide technical information and advice to the board.

(3) Determine criticality of each task based on the task selection model.

(4) Nominate each task as critical or non-critical.

(5) Make initial recommendations as to where to teach the task (institutional, operational, or self-development domain), and the frequency of instruction. This includes making initial recommendations as to whether the task is a viable candidate for DL. The CTSSB must be informed regarding any task or competency not appropriate for DL.

(6) Recommend task conditions, equipment required to complete the task, performance steps and measures, task evaluation methods/techniques, and safety and environmental concerns/considerations.

c. Training developers must ensure inter-service tasks are included in institutional training and education as appropriate. Proponents that teach inter-service lessons must include a SME on CTSSBs that address Army universal task list- and universal joint task list -supported tasks. Proponents develop the list of individual critical tasks/competencies, including inter-service tasks, for each branch/MOS.

d. The evaluator is a non-voting member who ensures recommendation of tasks as critical/non-critical based on an appropriate task selection model, and ensures the task title meets the requirements (see TP 350-70-1 for task title requirements).

e. An RC representative is a voting member who functions as a SME and ensures RC requirements are included in the decision.

f. The job analysis process is completed when the individual critical tasks are identified and approved by the training and education proponent commandant/agency commander or the designated representative. Keep an audit trail of all tasks not deemed critical by the board.

g. Additional information on the CTSSB is in appendix C. A job analysis checklist appears in paragraph B-1.

4-7. The individual critical task list (ICTL)
The ICTL is the output of the CTSSB. Steps to obtain the ICTL are as follows:

a. Conduct a CTSSB. Voting members come AA and RC units from both the operational (preferred) and generating force.

b. Apply selection criteria and a critical task selection model.

(1) Provide new or deleted task recommendations to the approving authority with justification for major changes or updates to the ICTL. Provide a copy of the commandant-approved ICTL to the office(s) that will conduct the individual task analysis. Provide a copy to the proponent's office for update of applicable Army 611-series publications on Personnel Selection and Classification. Modify and obtain approval of a revised ICTL from the

approving authority and distribute the revision when the follow-on task analysis determines that a task is really two tasks, the approved critical task is not a task, or when a task was omitted. Review of ICTLs must be conducted every 2 or 3 years to ensure that the critical tasks and their links to 21st Century Soldier Competencies are relevant to the force.

(2) Coordinate requirements for RC SME support for CTSSBs with the Director, Army National Guard and the United States Army Reserve (USAR) Command. Coordinate with training and education proponent for task analysis data and the Soldier training publications (STPs). Provide the complete recommended ICTL to the training and education proponent commander/commandant for approval. A copy of the recommendations and justification for major changes or update to the ICTL may also be included, as requested.

(3) For minor changes to the ICTL, e.g., rewording or combining, it is not necessary to reconvene a CTSSB.

(4) Enter the approved ICTL into TDC. It is important to note that the ICTL is the place to link the frequency and training location for these tasks. An example of an ICTL appears in appendix D with examples of institutional products and supporting products. An individual task checklist appears in TP 350-70-1. Approved ICTLs are posted on the Central Army Registry (CAR).

4-8. Individual task analysis

a. Individual task analysis is the basis for deriving performance data. This is the process used to identify how the task is actually performed, under what conditions it is performed on the job, and how well the individual must perform the task. The task analysis provides the detail to design and develop efficient and effective individual training. A new individual task analysis starts on receipt of a new individual task or when there is a significant change in how a task is performed. An individual task analysis revision begins when needs analysis identifies that a training/TD requirement is the solution. A task analysis of each individual task will identify all the performance specifications, skills, and knowledge needed to establish a training strategy and to design and develop follow-on training. Current, complete, and comprehensive individual task analysis is critical for training and education. It provides the details to design and develop individual learning products and provide the framework for individual skills and knowledge to support collective training. It is the responsibility of the proponent developer to keep individual task analysis data current. TP 350-70-1, chapter 7, outlines the individual task analysis process and steps.

b. The developer, in coordination with course managers and SMEs, performs analysis and identification of skills and knowledge. This is the critical, detailed analysis step or activity that ensures the learner possesses the requisite skills and knowledge needed to perform the task or further develop the learner's attributes or abilities. Identify skills and knowledge early in the analysis phase.

(1) A skill is one's ability to perform a job-related activity that contributes to the effective performance of a step or learning activity. There are two types of skills, physical and mental. A skill description consists of a transitive verb and an object.

(2) Knowledge is job-related information analyzed to provide meaning, value, and understanding to perform skills, activities, or job functions. Knowledge is further defined as comprehension gained by deliberate, systematic, sustained effort through study, experience, practice, and human interaction that provides the basis for expertise and skilled judgment.

4-9. The critical-individual task-to-lesson matrix

When developing a new lesson, the developer identifies the critical individual tasks that need to be taught. Developers should use the ICTL to lesson crosswalk in appendix E to ensure all critical tasks are captured in a lesson. Chapter 7 details lesson design and development.

Chapter 5
Target Audience Analysis

5-1. Introduction of target audience analysis

a. Before learning product development can begin, define the target audience (students). Target audience analysis identifies and describes the individuals who perform all the tasks associated with the specific job or function to be taught.

b. Target audience analysis produces various data depending on the nature and scope of the analysis. Ask instructors/facilitators and jobholders, who are at the next higher skill levels of the tasks to be taught, to review the existing target audience description to determine the scope of the analysis. The description may be accurate as is, or may only need minor revision. Figure 5-1 lists common data used to determine the target audience. The rest of this chapter addresses conducting a new target audience analysis, and what to do if there are major changes in an existing target audience analysis. Use the target audience description when determining the learning product's content, length of instruction, equipment/materials needed, methods of instruction (MOIs), instructional strategies, and media. Consider the ALM during target audience analysis to ensure compliance with the latest guidance.

• Job history • Previous education (skills/knowledge) • Reading grade level • Previous experiences • Workplace conditions • Demographics • Armed Services Vocation Aptitude Battery (ASVAB) scores required for the job	• Computer/ device literacy • Size of population • Location(s) of population • Maturity • Motivation to learn • Interests

Figure 5-1. Common target audience data

5-2. Data collection planning

Data collection is a systematic process for aggregating data in a logical sequence so the developer can more effectively analyze the information. Planning ensures that the sample size is sufficient to provide accurate, valid, unbiased, stable, and relevant data. Planning improves the development team's ability to create data collection instruments and to collect data. Identify the data collection project's goals and objectives, as listed in figure 5-2.

• Briefly describe data collection project. • Identify specific data required. • Identify data sources. • Interact with people knowledgeable of the target audience demographics. • Select method to collect data (how and who) and include rationale. • Identify method to analyze data. • Identify historical data (if applicable) to compare with current and/or future collection.	• Define insights that data will provide. • Define the collection timeframe. • Define expected outcome of collection (how will data improve learning product development). • Identify method of reporting finding and recommendations.

Figure 5-2. Target audience data collection goals and objectives

5-3. Determine population size, location, and availability

School proponent offices of the tasks or competencies to be taught will know the population density of projected students by MOS or required skill set. They will also know the units with those specific MOS or skill set requirements, which identifies the locations of the population. Knowing this information will help determine effective sampling procedures and appropriate data collection methods. It will also help determine how to deliver the instruction. Factors to consider are:

a. Population size. If the target audience is large, then development of DL may make sense. However, if the target audience is small, then DL may not be cost effective.

b. Population location. If the target audience is widely dispersed, it may not be practical to bring students to a central location for instruction. If this is the case, a resident course may not be the appropriate method.

c. Population availability. If workload requirements will not allow Soldiers to be away from the unit for long periods, it is not likely that a resident course will be appropriate.

d. Additional factors to consider include, but are not limited to, population demographics, experience, and education level.

5-4. Develop data collection instruments

a. Sampling. A sample is a representative segment of a target audience. If the sample is a true representation of the target audience population, then the data will be accurate.

b. Sample size. Determine how many completed surveys, interviews, or observations are required to produce a reliable report. It is essential to provide senior leadership with accurate data, and critical to assure leadership that the information collected represents the target audience. There are five variables related to sample size relevance:

(1) Number of participants in the target audience.

(2) Margin of error in the results.

(3) Results confidence level.

(4) Percentage of usable survey or interview responses or observations.
.

(5) Expected rate of return of responses.

c. Sample size determination procedure. Table 5-1 contains the sample size determination procedure.

Table 5-1
Sample size determination procedure

Step	Action
1	Use the information regarding the target audience in the data collection plan to ensure the target audience demographic was clearly identified.
2	Estimate how many individuals are in the demographic.
3	Select a confidence level that produces "representative" results.
4	Determine the estimated rate of usable surveys to use, the number of individuals/groups to interview, or the location and number of individuals to observe.
5	Determine the amount of data to collect and how many evaluators will be required to collect it.

d. Sampling techniques. Derive relevant data from multiple sources using more than one collection method. The most commonly used sampling techniques are:

(1) Simple random sampling. A sampling technique in which each individual of a population is chosen by chance, and each member of the population has an equal chance of being included. Select the group of subjects (the sample) from a larger group (the population).

(2) Stratified random sampling. A sampling technique where the population is divided into categories (strata) and then data is collected from the strata by simple random sampling. The bases for these categories are certain characteristics relevant to the survey (such as age, training and education level, rank, or gender).

e. Existing data collection instruments. Determine if currently available data collection instruments (surveys, interviews, observations, and forums) meet the project's needs.

f. Instrument design and development. If existing instruments are inadequate, design and develop instruments to meet the project's goals and objectives (such as questions and observation methods).

g. Data collection items (questions). Design and sequence the questions properly.

(1) Questions should be appropriate to the type of instrument, audience demographic, and evaluation purpose. Questions may take varied forms, but must remain relevant to the purpose of the evaluation.

(2) Design questions using a systematic, highly defined approach to obtain consistent data that can be compared, summarized, and, if the data are quantitative, subjected to statistical analysis. Consistently apply the following criteria because they can limit the instrument's validity if applied sporadically or inconsistently.

(3) Write questions in a way that does not bias a respondent to show him or herself in a favorable light.

(4) Design questions in a way that does not influence a respondent to be unduly helpful by anticipating what the evaluator wants to hear or find out.

(5) Use questions written to minimize the chance that they ask for information which respondents are not certain, and perhaps not likely, to know.

Note: The Army Research Institute must approve surveys that cross major command lines. Surveys conducted by centers/schools pertaining to training and education may be occupational surveys, as well as attitudinal surveys.

h. Instrument validation. Validate instruments on a small scale and revise based on feedback if necessary.

5-5. Data collection

a. Data collection actions include:

(1) Team leader ensures team members follow a plan.

(2) Team clearly comprehends the project's goals and objectives.

(3) Team agrees on collection method and process.

(4) Team continues collection until there is adequate sample size, per strata.

b. Two technical approaches used to collect data are quantitative and qualitative methods. Figure 5-3 depicts the differences between these two methods.

Quantitative Data	Qualitative Data
• Numerical values and measurements • Reliable and measurable • Easy to compare and analyze • Less time consuming	• Associated with constructs such as cognitive behaviors, feelings, and perceptions • Concerned with descriptions • Data can be observed but difficult to measure

Figure 5-3. Quantitative and qualitative data comparison

(1) Quantitative data. Quantitative data allows measurement of an amount (how much or how many) on a numeric scale. The most frequent use of this method is in observations, surveys, and interviews. Quantitative data expresses the results of measurements of a sample of an organization, group, or individual, and is normally used as a basis to determine final courses of action for learning product development.

(2) Qualitative data. Qualitative data allows the measurement of concepts such as feelings, behaviors, and perceptions. Use of this method gains comprehension of behaviors, motivation, and/or reasons for actions to provide insight into a scenario or problem situation. The goal of qualitative data is a detailed description of the concept being measured.

c. Analysts should ensure that data is obtained from appropriate sources and provide pertinent, reliable, and valid information. For target audience analysis, data sources include the target audience sample, supervisors of the target audience, the school proponent office, SMEs, and instructors/facilitators. Figure 5-4 contains a general list of possible data sources.

d. A mixed methodology may work best where the strengths of both quantitative and qualitative could be beneficial.

• Center for Army Lessons Learned • Combat Training Center rotation feedback • Critical operational lessons learned collectors • Learning product evaluation reports • External evaluation reports • Instructor/ facilitator feedback • Student performance measurements and assessment results	• Subject matter experts • Learning product, doctrine, and capability developers • Observations • Interviews • Focus groups • Conferences and seminars • Document reviews

Figure 5-4. Possible data sources

5-6. Data analysis procedure
Analysts must know how to review, summarize, and analyze raw data, as well as how to interpret the analysis results. Table 5-2 contains the data analysis procedure.

Table 5-2
Data analysis procedure

Step	Action
1	Review data collection plan goals and objectives.
2	Determine reliability and validity of raw data.
3	Prepare analysis data. Summarize the data to avoid searching through individual responses. This ensures every reply is counted.
4	Analyze the data. For quantitative data, convert raw figures into percentages, proportions, averages, or another quantitative form that is more easily understood. The choice of statistical description depends on the purpose of the data, which was determined when the analysis was planned. For qualitative data, conduct content analysis and triangulation.
5	Interpret the analysis findings.

5-7. Review goals and objectives
To stay organized and focused, analysts should review goals and objectives for the data collection plan to put the data into perspective. This will help them categorize and compare results with the expected outcome.

5-8. Determine reliability and validity of raw data
Review raw data to ensure:

a. Adequate data samples were collected to ensure the reliability of the findings. Sample size (per strata, if stratified) should be a predetermined goal established in the planning phase of the analysis.

b. Ensure data is reliable by checking the following:

(1) Are responses consistent? For example, examine responses about the same subject on the same instrument (the same question was asked in two different ways) to see if the same answer was obtained. Note that inconsistency may not invalidate the data.

(2) Are there indications participants did not answer the question seriously? If a scale was used to rate a list of items, look for the "social desirability" effect (rating of all items positively), and "central tendency" (indiscriminate rating of items in the center of the scale). View these responses with caution.

(3) If different analysts administered interviews or observations, ensure they followed standardized procedures for collecting and recording data.

(4) Are responses inappropriate, illegible, or confusing? To maintain data integrity, discard any irrelevant responses and those with discrepancies that cannot be resolved.

(5) Was triangulation used? Triangulation (using multiple methods to study the same thing) can corroborate evidence and increase validity, especially for qualitative findings.

(6) Do analysts who did not conduct the observation interpret recorded notes differently than the analyst did? This indicates faulty triangulation and the notes may be imprecise. View this data with caution.

c. Check data for integrity. Unanswered questions could indicate several possibilities--the participant did not know the answer, refused to answer, or the question did not apply.

d. Proponents or schools may have standard operating procedures (SOPs) that include statistical measurement for the reliability of data. If the SOP requires using unfamiliar statistical analysis, consult a statistician or evaluator experienced in statistics.

5-9. Prepare analysis data

Condense the data for analysis by entering quantitative data into a statistical data analysis program and summarizing and condensing all qualitative data into categories. It is difficult to accurately and effectively summarize this data, which is why evaluators need to review the data collection's goals and objectives.

5-10. Analyze data

a. Various methods may be used to analyze data. Data collected is either qualitative data (expressed in narratives or words), or quantitative data (expressed in numbers). Table 5-3 provides guidance for analyzing both types of data.

Table 5-3
Qualitative and quantitative data analysis

Quantitative data	Qualitative data
• Make copy of data and store master for historical use. • Use copies for edits or revisions. • Tabulate the raw data and measurements. • Assemble data into rankings and ranges for example, using statistical analysis.	• Examine all of the raw data. • Organize (code) comments into similar categories or themes including experiences, recommendations, outputs/outcomes, concerns, strengths, and weaknesses. • Identify patterns, associations, and trends. • Maintain records (for example, databases or spreadsheets) of this data for future reference.
Note: Pay special attention to participants' notes, comments, and answers to supplemental questions on surveys (or other data collection instruments).	

b. Analyzing quantitative data requires statistical analysis. Statistical analysis involves the collection, analysis, interpretation and presentation of data. There are two types of statistics, descriptive and inferential.

(1) Descriptive statistics are measurements that describe the data. This includes such measures as:

(a) Mean. This identifies the average value.

(b) Mode. The most common value.

(c) Median. The number separating the lower half from the higher half of a sample.

(d) Range. This identifies extreme values.

(e) Standard deviation. This identifies the degree of dispersion of values.

(2) Inferential statistics infer something about the total population from which the data was collected, usually through random sampling methods. It includes such analyses as:

(a) Correlation. This is a statistical analysis used to infer a relationship between two different populations based on data collected from a sample of each of the populations.

(b) Chi-square. This is a statistical test commonly used to compare observed or actual frequency with predicted or hypothesized frequencies.

(c) Analysis of variance. This is a statistical analysis used to determine whether there are any statistically significant differences between the means of two or more groups, one or more variables, or factors.

Note: Individual descriptions on how to use these various methods for analyzing data are not provided. If the evaluation plan requires using unfamiliar statistical analysis, consult a statistician or evaluator experienced in statistics.

5-11. Interpret findings

a. Interpret findings. Interpret the findings in common sense terms, and be able to explain the results. Interpreting analysis is one of the most difficult parts of evaluation.

b. Identify trends. Annotate all trends and include them in the final report. Quantitative data is numeric and requires statistical interpretation to represent findings. Qualitative data is often considered less objective than quantitative data. Despite the non-statistical nature of qualitative data, it can render more detailed, very useful information. However, specific procedures must be followed, especially when coding information and looking at themes and relationships at the case level.

c. Interpretation of results may require the use of unfamiliar statistical procedures or qualitative methodologies. Obtain the assistance of a statistician or more experienced analyst when using unfamiliar quantitative or qualitative methods.

5-12. Target audience analysis for students in attendance

Another form of target audience analysis is to identify the skills and abilities of the students in attendance at a learning event. Achieve this through pre-assessment.

a. There are three types of pre-assessments that can be used for target audience analysis.

(1) One type of pre-assessment determines whether students possess the skills and knowledge required to successfully learn the course's objectives. In other words, it covers the skills and knowledge required, not the learning objectives in the course.

(2) A second type of pre-assessment is designed for testing-out purposes, in which case it covers all the learning objectives included in the portion of instruction to be skipped.

(3) A third type of pre-assessment helps the instructor tailor training, and his/her approach to training, based on the students' experiences and knowledge levels. This type of assessment may also allow the instructor to better organize learning groups of students, ensuring a capable peer coach is in each learning group or dividing large number of students into regular student groups and accelerated student groups.

b. The following is an approach to conducting a target audience analysis:

(1) Identify student experiences that may influence their ability to achieve the course objectives.

(2) Determine the type of target audience data needed. For example, if the course requires using DL, what skills will the target audience possess to succeed in a DL course?

(3) Determine where to find target audience data such as personnel data forms, class demographics, questionnaires, etc.

(4) Develop a target audience profile. What are the expected experience, knowledge, skills, and abilities of the student? What level of learning, course content, delivery methods, and instructional strategies would be appropriate?

(5) A lack of target audience baseline knowledge and experience may require modification to the course, lesson(s), or a prerequisite requirement.

Chapter 6
Courses

6-1. Introduction to courses

a. This chapter contains guidance for course design and related issues. A course is a complete series of instruction (lessons, often organized by modules and/or phases) identified by a common title and number. A course consists of curriculum composed of critical tasks or educational requirements that qualifies a person for a specific MOS, AOC, functional area, or skill set. The developer, course manager and leadership develop courses that are supported by a program of instruction (POI) and course administrative data (CAD), and managed by the course manager and leadership. A formal analysis and the ALM are the basis for Army course design. The ALM outlines a path forward for individual training and education, leader development, and collective training.

b. TRADOC DCS G-3/5/7, Training Operations Management Activity (TOMA), assigns the course number based on numbering conventions outlined in DoD 1312.1.I, DoD Occupational Conversion Index. Course titles are specific to reflect DA Pam 611-21, Military Occupational Classification and Structure job positions. The exception is functional courses for which the subject proponent may recommend a course title to reflect some association with the functional subject taught. TP 350-70-9 contains additional information on course numbering and titles.

c. A single course is designed to train an MOS/AOC skill level, skill qualification identifier, ASI, LIC, or skill identifier within the Army. A single course can also be designed for MOS qualification (MOSQ, i.e., reclassification), Army leadership, functional, professional development, and civilian courses. The course's structure (phases, modules, lessons, and assessments) and supporting media ensure standardization on critical tasks and competencies which Soldiers and students must achieve given performance standards. Course lengths, but not standards, may vary due to such differences as AA and RC training day lengths.

d. The following procedures and major requirements apply to course analysis and design. These procedures cover analysis and design of resident courses; lesson plans; correspondence sub-courses; courses/lessons using video tele-training; multimedia (including IMI); and training aids, devices, simulators, and simulations (TADSS). See TP 350-70-12 for more specific guidance on DL course structure.

6-2. Analysis

Before course design begins, it is essential to revisit the job and individual task analysis data. The task analysis data provides the material needed to design and develop the appropriate training and education needed by Soldiers and civilians. Training/education proponents must coordinate with the ARNG and USAR for SME support through the Director, Army National Guard (ARNG) or USAR, or the Total Force Integration Officer (TFIO), as appropriate prior to proponent command approval. Include RC SMEs on the CTSSB. If on-site SMEs are not available, gather TD information through other means (e-mail, VTC, etc.). The following procedures and major requirements apply to course design:

a. Use the individuals who conducted the analysis to establish the design team. When possible, consider using the same team for development.

b. Acquire and use the analysis data.

(1) Revisit job analysis to verify critical tasks (reconvene CTSSB as necessary).

(2) Review/revise individual task analysis data as necessary.

(3) Make appropriate revisions per job analysis and individual task analysis.

(4) For function based courses, review the applicable regulations and directives that govern the function(s).

(5) When reviewing a course for currency, the task data captured in the ICTL should be included in the analysis to verify task currency and correctness.

6-3. Course design considerations

a. Course design translates analysis data into sequential, progressive instruction. Designing a course includes determining the purpose of the course, establishing learning objectives, creating evaluation and assessment plans, determining course materials and learning activities, organizing and structuring course content, and identifying all resource requirements. It answers the questions "What do you want the students to know once the course is over?" and "How do you assess what the students need to know or do?".

b. The majority of course development work consists of changes to existing courses. Proponents will occasionally develop new courses in response to major DOTMLPF changes (such as a new MOS) or a training deficiency identified by the field. Operational forces may propose development of a course. New course development should begin five years before

the implementation date. This lead time can be shortened to three years, but that is the minimum required to develop the course materials and program, and acquire the necessary resources, train cadre, and schedule facilities. Courses that must be implemented within this compressed timeline require resource trade-offs that require approval by the TRADOC Deputy Chief of Staff, G-3/5/7. TP 350-70-3 contains a course management plan format.

Note: Design courses so they are adaptable for reclassification training. Separate modules allow for reclassification training of branch as well as new shared task training.

c. For examples of effective course design models used by leading educational institutions, see the *Design and Teach a Course – Teaching Excellence and Educational Innovation - Carnegie Mellon University* website (link provided in the glossary and on TED-T).

d. When establishing a course design, the following should also be considered:

(1) Avoid redundant training. Redundant training occurs when training of a task is repeated at subsequent skill levels. Training proponents need to ensure that each course initially trains only those critical tasks for the skill level being trained.

(2) Refresher training is used to reinforce previous training and/or sustain/regain previously acquired skills and knowledge. Lower skill level tasks and supporting skills and knowledge may be reinforced in a higher skill level course.

(3) Reclassification courses provide the training of Soldiers to perform a different job within a given career management field (CMF) (from one MOS/AOC to another) and across CMFs (one CMF to another).

(a) Design courses into modules to allow for training of those tasks needed for job reclassification only (usually required branch-specific as well as shared task training). Properly developed modules will lend themselves to reclassification training within a given CMF as well as across CMFs.

(b) The most efficient and effective way to design a reclassification course is to first prepare a task list specific for the Soldier(s) being reclassified in order to identify the actual tasks to train. See figure 6-1 to prepare this task list.

1. Compare critical task lists for the Soldier's current job and the job to be trained.

2. Eliminate the tasks the Soldier has already been trained to perform from the new job task list. This includes –
(a) Common Soldier tasks.
(b) Common skill level tasks.
(c) Shared Combat Arms (CA), Combat Support (CS), Combat Service Support (CSS) tasks.
(d) Shared branch tasks.

3. Design training to train the remaining tasks (basically MOS/AOC-specific and shared tasks as needed).

(a) Consider DL for reclassification training. If IMI is used in resident IET, these lessons should be designed so they may be useable for distance learning of reclassification training.

(b) If desired, further define training requirements by comparing the skills and knowledge for the remaining tasks and eliminate the skill/knowledge training on which the Soldier has already received training. Individual self-paced training using CBI has the capability to provide this training.

Figure 6-1. Reclassification training design considerations

(c) Additional information for both reclassification and mobilization training design can be found in the training portal on the Army Training Network.

6-4. Course design requirements

a. Course design establishes: how (media/method), when, and where training will be conducted, training structure (courses, phases, lessons, etc.), sequence requirements as applicable, assessment plan, and graduation requirements. The course design procedures are for an initial course design effort. All of the steps may not be required for a revision effort. For a revised course, a revised individual training plan (ITP) is required. Required course design outputs are captured in the course master in TDC to populate select fields in the CAD and POI. The required design fields consist of:

(1) Course purpose and scope. The scope will include the approved course outcomes.

(2) Course prerequisites.

(3) Structure and sequence. Establish the mode(s) of delivery for each module or phase, consider any recommendations from the CTSSB; this is the manner in which instruction will be presented. Developers must give special attention when designing courses into modules for DL to ensure that mode(s) of delivery per module are conducive for DL management.

b. See Appendix B-2 for a course master QC checklist.

6-5. Course purpose and scope

a. State the purpose of the course in a clear and concise statement. The purpose statement must completely answer the question: What is the reason for creating this course? The purpose statement should generally align with the course outcomes. An example purpose statement is: "To provide personnel with the skills and knowledge to perform unit maintenance of towed cannon weapons armament systems."

b. The scope identifies the types of skills and knowledge provided and the level of complexity of jobs a graduate will be qualified to perform upon completion of the course. If the course has multiple phases, the scope must identify those phases and state the delivery mode for each phase. For example, Phase 1 is distributed learning, and Phase 2 is resident education. An example scope statement is as follows: "Training includes but is not limited to operator preventative maintenance checks and services, operation and maintenance on the forward air defense command and control system, air defense airspace management cell system, and the air and missile defense planning and control systems equipment in support of the brigade combat team and echelons above."

6-6. Course prerequisites

a. Course prerequisites identify the minimum requirements (knowledge, supporting skills, and tasks) the target audience must possess or be able to perform to attend the course. Prerequisites might include a minimum grade requirement, a height and weight requirement, or a security clearance requirement. An example prerequisite is as follows: "Active Army, Army National Guard, or Army Reserve enlisted personnel qualified in MOS 13B in the rank of E1 through E5."

b. The prerequisites:

(1) Establish entry level requirements so courses can have a common start point.

(2) Can limit courses to those who require training/education for job performance.

(3) Exist for courses, phases, modules, lessons, objectives, and learning steps.

(4) Are used to develop sequential, progressive training and eliminate or prevent development and implementation of unplanned or unnecessary duplicate training/education.

c. Examining course prerequisites helps to decide if diagnostic assessments, pre-assessments, post-assessments, or remedial or supplemental materials are required for successful course completion. Table 6-1 lists the steps to identify course prerequisites.

Table 6-1
Course prerequisite determination

Step	Action
1	Review analysis data (target audience and individual task).
2	Crosswalk the required skills and knowledge with the skills and knowledge acquired from previous courses or job experience.
3	Review the DA 611-series publications for specific MOS/AOC requirements. Examine physical profile, civilian education level, aptitude scores, and occupational specialty enlistment requirements.
4	Examine other sources of relevant data: • Manpower and personnel integration plan for likely characteristics of personnel for new materiel or equipment and the range of individual qualifications and dimensions for proposed operators and maintainers. • Available studies or Army Research Institute data. • Human Resources Command reports and databases.
5	Enter course prerequisites in the CAC-approved automated development system.

d. For quality control, individuals involved in writing and reviewing learning design must ensure the prerequisite skills and knowledge identified are included in lower level training which is prerequisite to the new/revised training. The prerequisites should not be included in the new/revised training except as planned reinforcement (sustainment or refresher learning).

6-7. Structure and sequence

a. A course can be comprised of phases, modules, and lessons. Courses can have one or more phases and usually have several modules. Course design translates lessons into sequential, progressive learning modules and phases. This ensures the overall efficiency and effectiveness of the total course, including identification of all resource requirements.

(1) Phases will divide a course into complete blocks that allow the instruction to be provided via different delivery options. For example, phase I may be a resident phase, and phase II may be conducted through distributed learning. Each phase will have its own distinct CAD and POI in order to capture complete resource requirements by phase and allow for rapid response to changes as they occur.

(2) Grouping terminal learning objectives into modules promotes efficiency in the course structure (discussion of TLOs appears in chapter 8). Using modules allows appropriate amounts of time between instructing dependent objectives. In the automated system (currently TDC) when lessons are grouped into modules, the supporting administrative information and resource data can be pulled into the POI and TSP from the lesson plans. See chapter 10 for more information on TSPs.

(3) Figure 6-2 depicts how the course structure generally organizes and sequences the phases, modules, and lessons.

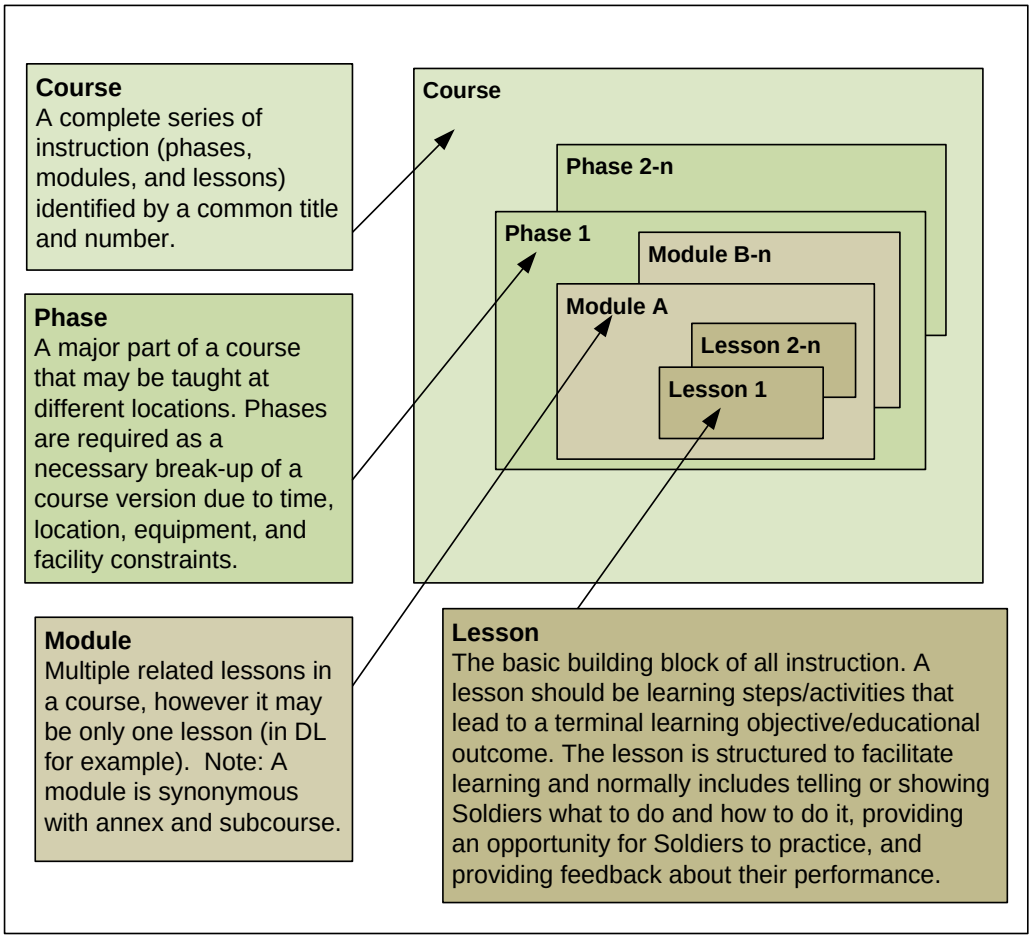

Figure 6-2. Course structure and sequencing sample

b. Developers must consider continuity and retention factors when designing course structure and sequencing.

(1) Portray the initial course structure in an outline. The outline serves as a working document, allowing flexibility to modify lessons and learning materials or products as needed.

(2) Identify and sequence the phases and modules. An optional supporting product is a matrix showing dependent relationships among tasks, skills and knowledge, and learning objectives to identify and sequence the modules.

c. The course structure includes phases, modules, and lessons using different media for various modes of course delivery (resident, non-resident, DL, or blended). Table 6-2 defines course delivery modes.

Table 6-2 Course delivery modes

Delivery Mode	Definition
Resident	The instruction is completely conducted at a specific accredited The Army School System (TASS), school. Instructor/facilitator and students must be present for the duration of the instruction at the same time and location.
Non-Resident	The Instructor/facilitator and student are present at the same time and location, but the location of the instruction is not at a TASS school location.
DL Asynchronous	The instructor and the students interact while located in different places and during different times. Students are free to choose their own instructional time frame and gather learning materials in accordance with their schedules. Asynchronous instruction is more flexible than synchronous instruction. In the case of electronic communication (such as email or online discussion forums), asynchronous instruction allows and/or encourages community development.
DL Synchronous	The instructor and students interact while located in different places but during the same time. The synchronous learning environment supports communication in which interaction between the participants is simultaneous through two-way audio or video, computer document conferencing, or chat rooms (AR 351-9).
Blended	Instruction that blends face-to-face interaction such as in-class discussions, active group work, and live lectures with typically web-based educational technologies such as online courses, assignments, discussion boards, and other web-assisted learning tools. May utilize a combination of any of the other delivery modes for various modules or phases.

6-8. Course development

The development phase of ADDIE refers to developing the details of the product. Course development is a matter of providing the products that comprise the details of the course. These include:

a. Course Management Plan (CMP).

b. Lessons (based on the terminal learning objectives).

c. Individual student assessment plan (including test designs and test items).

d. Course map and course schedule.

e. Course length.

f. Student guide.

g. Resource requirements.

h. Instructor/facilitator guide.

i. Updating/revising course design as needed.

j. Obtaining course and POI approvals. The course is complete when the appropriate proponent command authority approves the developed course.

Note: Appendix D-2 provides a course example from TDC.

6-9. Course management plan (CMP)
The CMP is a document that tells the course manager and instructors/facilitators how to conduct the course. Prepare a CMP for courses, phases, or modules (including Total Army Training System (TATS) courses and courses designed specifically for the RC). The CMP should reflect any differences for the AA and RC instructor and/or student implementation guidance. Proponents must ensure its availability wherever the learning product is used. Courses that are taught by multiple proponents also require a CMP. The CMP development begins upon the approval of the course design and is completed concurrent with the submission of the POI. More guidance regarding the CMP and the CMP format appear in TP 350-70-3.

6-10. Lesson design and development
Based on the TLOs, lessons are the primary products of course development. The lesson design drives the resource needs that are captured in the lesson plan. Complete the lessons and lesson plan development prior to completing course development. Chapter 7 describes lessons and lesson plans in detail.

6-11. Individual student assessment plan (ISAP)
Develop the ISAP, formerly known as the student evaluation plan (TP 350-70-5), and tests in conjunction with the lessons and lesson plans. There must be an ISAP for each course and it must minimally note the assessment for each TLO. The ISAP informs students, instructors/facilitators, and other personnel of graduation requirements. The ISAP is included in the student guide (syllabus). For all Army courses, explain the ISAP to students at the beginning of the course and post it for the students' reference. The ISAP must reflect TRADOC testing policy and must be included in the TATS course TSP. The ISAP establishes policies and procedures that state student responsibilities. An ISAP also establishes how the proponent school will determine if the student has demonstrated a sufficient level of competency to pass the specified course. The plan must include details of how the student's performance will be assessed. Table 6-3 provides the steps used to write an ISAP. The ISAP is considered complete when approved for implementation by the appropriate designated authority.

Table 6-3
General steps for writing an ISAP

Step	Action
1	Establish policies and procedures which state student responsibilities.
2	Establish how the proponent school will determine if the student has demonstrated a sufficient level of competency to pass the specified training course.
3	Detail how the student's performance will be assessed (e.g. rubrics).
4	Identify all course assessments.
5	Establish weight points for each assessment (if necessary).
6	Establish course completion/graduation requirements. (a) Establish "GO/NO GO" requirements for each performance assessment based on the tasks standards that the training is based upon and the learning objectives for the training. (b) Establish minimum passing score for each performance-based assessment using the learning objective standards, the performer/non-performer classification (i.e., as determined from test validation), and/or expert opinion analysis. (c) Establish final grade requirements. (d) Identify specific assessments that must be satisfactorily completed to graduate.
7	Establish assessment procedures: (a) Delineate school/course policy for academic and/or non-academic probation. (b) Delineate school course policy for academic and/or non-academic relief/recycle policies. (c) Include a flow chart to depict the relief/recycle process.
8	Define sustained poor performance (if applicable).
9	Include affiliation grade, college credit, or American Council on Education (ACE) information (if applicable).
10	List specific lessons assessed.
Step	**Action**
11	Delineate counseling policy.
12	Delineate remedial training policy.
13	Delineate re-teaching/retesting policies and procedures.
14	Delineate pretesting (testing out) procedures.
15	Establish test-challenging procedures.
16	Identify other assessment requirements, such as those in the Army Weight Control Program and Physical Fitness Test, and define the impact of each on course completion/graduation.

6-12. Course map and course schedule

a. The course map is the compilation of the course structure, based on the course outline previously developed, with the addition of the lessons (sequenced as necessary or appropriate). When the lessons and lesson plans are completed, detail the final establishment and sequence of the lessons in the course map, a graphic portrayal of the overall course's presentation. The course map ensures horizontal and vertical alignment of the phases, modules, and lessons to support the learning outcomes. The mapping process involves identifying where in the course to introduce, develop, and master each of the learning outcomes. The course map is published in the course management plan.

(1) Course mapping involves developing a master chart that indicates which outcomes are being met, to what extent, and how often.

(2) The course map visually and substantively reveals any student-learning gaps in the program that could cause difficulty in meeting the program's measurement targets for its student-learning outcomes.

(3) The generic course map that appears in figure 6-3 shows a course divided into phases with estimated hours, and modules with delivery mode identified, estimated hours, and lessons per module identified.

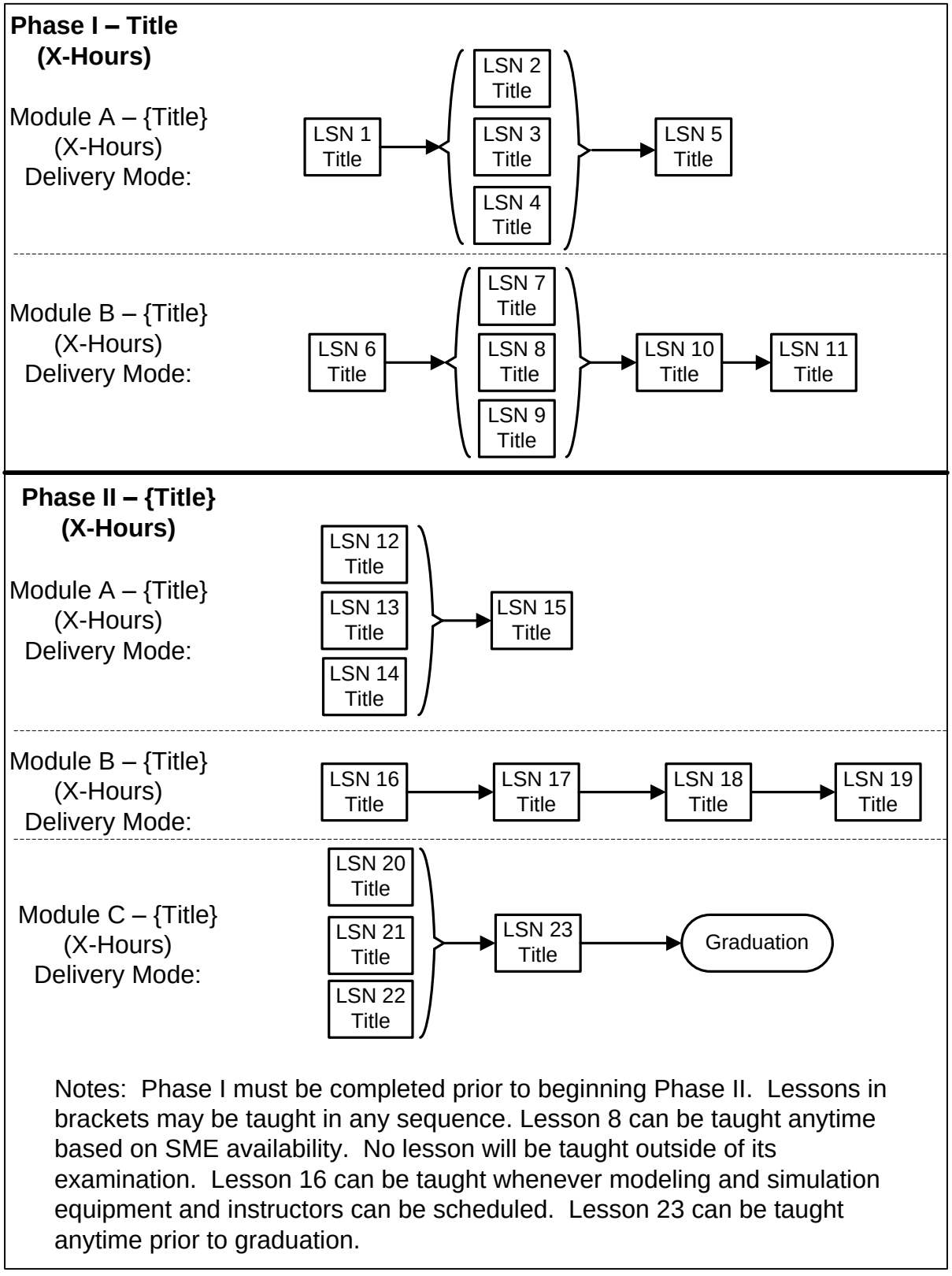

Figure 6-3. Sample course map with phases, modules, lessons and notes

b. Developers can provide input to the schedulers for the course based on the structure, sequencing decisions, and the course map. Sequence the learning progressively. Tie the TLOs together logically and efficiently by:

(1) Identifying and sequencing the lessons into modules. Some modules may teach specific items of equipment to the AA or RC based on equipment assigned to their units.

(2) Identifying and sequencing the modules into phases or a course. The Army Training Requirements and Resources System (ATRRS) treats a phase as a course. ATRRS can then put multiple phases together as a graduation requirement.

(3) Establish the course delivery mode(s) for each phase/module.

c. Other contributing factors that determine logical sequence of learning outcomes include: job performance order, chronological order, cause and effect order, critical order, and simple-to-complex order.

d. A course schedule is a chronological order sequence that is used to outline each hour and day of instruction. The course schedule is usually based on 50-minute blocks of instruction and outlines the topics to be covered, as well as practical exercises (PEs) and scheduled assessments.

e. Another factor that impacts sequencing of lessons is the instructional strategy and methods of instruction for lesson delivery.

f. In some cases, alternate acceptable lesson sequences are needed for instruction due to classroom and/or equipment limitations. In these cases, lesson sequence variations should be included with the course schedule along with course map notes such as those provided in figure 6-4. Some possible sequence variations for the course in figure 6-4 would be noted as follows:

Schedule	**Phase I – Alternate Lesson sequences**
A	1, {2, 3, 4,} 5, 6, {7, 8, 9,} 10, 11
B	6, {7, 8, 9,} 10, 11, 1, {4, 3, 2,} 5
C	1, 6, {9, 8, 7,} 10, 11, {2, 3, 4,} 5
D	6, 1, {2, 3, 4,} 5, {8, 9, 7,} 10,11
Schedule	**Phase II – Alternate Lesson sequences**
A	{12, 13, 14,} 15, 16, 17, 18, 19, {20, 21, 22,} 23, graduation
B	{14, 12, 13,} 16, 17, 18, 19, {21, 22, 20,} 23, 15, graduation
C	{20, 21, 22,} {13, 14, 12,} 23, 15, 16, 17, 18, 19, graduation
D	(22, 20, 21,} {12, 13, 14}, 16, 17, 18, 19, 15, 23, graduation
	NOTE: Bracketed lessons can be taught in any order based on facility and equipment availability

Figure 6-4. Example course lesson sequence

g. To ensure a quality learning sequence, the individuals involved in structuring the learning and establishing the sequence must ensure the sequence provides progressive learning and a viable course map.

6-13. Course length

Course length is the sum of the academic (lesson) and administrative hours. Establish course length by compiling time requirements for each lesson (see TP 350-70-9). The course length is a factor of how long it takes to train the average student to the established standards. The course length for a course taught in an RC school may vary due to differences such as training day lengths and a difference in academic hours. However, it must teach the same critical tasks/topics and associated learning objectives to the same standards. Avoid excessive course lengths. Give prime consideration to using distance learning techniques.

a. Identify lesson length in academic hours. An academic hour is a 60-minute time block consisting of 50 minutes of instruction and 10 minutes of administrative time. Lesson length is the sum of the learning step activities' (LSAs') time of instruction in minutes, but does not include course administrative time. Identify any mandatory time requirements for specific LSAs (otherwise, time requirements are estimates). Avoid excessive lesson lengths. Presenting learning in smaller packages helps to keep students focused on what must be learned.

b. Module length is the sum of included lesson lengths. Phase length is the sum of the included module lengths.

c. For the purpose of course design, the best practice for Army courses is to build in course administrative time of ten percent to account for non-academic requirements (see TP 350-70-9 for additional information).

6-14. Write the student guide

a. The student guide provides information students need to meet their responsibilities for learning and successful completion of the course. The guide also contains the learning/ training objectives, expected outcomes, and a copy of the course critique that the student is expected to submit before completion of the course. The student guide serves several important purposes. These include:

(1) To convey expectations for the course.

(2) To show how the course fits into a broader context ("the big picture").

(3) To state policies, requirements, and procedures for the course.

(4) To set the tone for the course and convey the expected roles of the instructor and the learners.

(5) To help students manage their learning by identifying outside resources and/or providing advice.

(6) To communicate course goals and content to colleagues.

b. Several components of a student guide are compiled in TDC in the TSP when enough details and directions are provided by the developer(s). See TSP development in chapter 10.

6-15. Resource requirements

TRAS documents provide the planning and justification documentation to clearly articulate resourcing requirements. Produce and refine TRAS documents concurrently with course design and development. The documents themselves, however, do not provide resources. The goal for budgeting and resourcing for Army learning products is for the products to link with the resource processes and systems in order to acquire the necessary resources in time and at the right place to accomplish training/education. A variety of systems and processes work concurrently to support the development and delivery of learning products. The three primary TRAS documents for resourcing courses include the ITP, CAD, and POI. The POI and CAD are developed and stored in TDC. Link the ITP as a supporting document. For detailed information on TRAS documents and exceptions for funding training and education, see TP 350-70-9.

a. The ITP is a long-range planning document that articulates the proponent's career-long training and education strategy for a MOS, AOC, or separate functional area. Proponents use the ITP to identify required courses and resource requirements in order to align with the PPBES budget formulation process. ITPs establish the purpose, scope and training/educational path of each course with long range development and implementation milestones. ITPs require continuous update by the TD proponents so they align future DOTMLPF changes that impact training, with the resourcing process.

b. The CAD is a TRAS document that is the proponent's initial estimate or projection of a course's administrative data and resource requirements; serves as a change document for submission of administrative and resource changes to a specific course or course phase; stimulates changes to the Army's institutional training management systems; and stimulates resource systems and processes needed to acquire the resource before the course implementation date.

c. A POI is prepared for all courses and is the most complete institutional training resource document. It provides a specific description of course content, duration of instruction, types of instruction, and lists resources required to conduct the course/phase. The POI is organized by blocks and units in the preferred sequence of instruction. It lists the course objectives, needed support materials, and training time apportionment.

(1) TDC generates a final POI once all lesson plans have been completed and approved within the TD database. Approved POIs will be developed and stored in the approved automated system (TDC).

(2) Proponents prepare POIs for courses that fall under the Interservice Training Review Organization (ITRO) rules. AR 351-9 describes policies, responsibilities, and procedures for interservice training and nonresident courses to include: DOD executive agent training; joint training; quota training; and, ITRO training. ITRO courses are classified as either consolidated or collocated (service-unique) within ATRRS. ITRO uses a detailed analysis methodology to determine fair share of resources to support training in consolidated courses (manpower, facilities, and funding). In addition, the ITRO provides a mechanism for resolution of issues which may arise during the life cycle of a consolidated and/or collocated course.

6-16. Developing an instructor/facilitator preparation guide

a. An instructor/facilitator guide is a document that contains information needed to teach a course. It is a best practice. This guide should include enough detail for a novice instructor to fully implement the lessons. If developed, the guide may include such items as room requirements; a list of necessary training materials such as workbooks and reference manuals; administrative notes about break areas and other information; before, during, and after instruction information; presentation requirements; and copies of lesson plans to include slides and handouts.

b. Where appropriate, write "NOTES" to provide necessary instructor information or actions. Include as many "NOTES" as needed to provide adequate "how-to" information for a substitute instructor. Place the "NOTE" as a separate paragraph in the lesson body where the event should take place.

c. Write a short motivator that:

(1) Provides relevance and significance to the lesson.

(2) Gains student interest and focuses them on what they are about to learn.

(3) Explains why the student needs to perform the learning objective and the consequence of nonperformance.

(4) Explains the actual job or operating environment that would make learning the objective essential for the student.

d. Provide details of what the student is to learn from any instructional media (e.g., video tape, audio tape) to be used during the lesson.

e. For a lesson plan:

(1) Write details for any “Checks on Learning" as appropriate. Provide remedial training for incorrect responses to “Check on Learning” questions/exercises.

(2) Write a full description of the test, details on how the student will perform the test, special requirements, and grading criteria. Provide remedial training for incorrect responses to test questions/exercises.

f. Several components of an instructor/facilitator guide can be compiled automatically in TDC as part of the TSP. Provide enough details and directions to make the TSP useful and include in the instructor/facilitator guide.

6-17. Update/revise course design as needed

The final step in course development is to review and update/revise any portion of the course design and development steps prior to submitting for approval. Pay particular attention to the course structure or course map that may need to be adjusted.

6-18. Obtain course and program of instruction (POI) approvals

The course is complete when the appropriate proponent command authority approves the developed course.

6-19. Quality control for courses (training product/material validation)

a. Evaluation and validation of courses helps identify and correct instructional system imperfections. The evaluation and validation processes determine if instructional system content, sequence, methods, and media decisions are sound. Decisions are sound if minimal time, money and other resource investments result in desired learner behavior changes. Ideally, evaluation and validation is a concurrent and continual process applied when developing course portions.

b. Validation scrutinizes all aspects of the course/courseware. Since it is impractical and impossible to conduct an intense analysis of all aspects of a course or courseware at one time, focus on specific aspects throughout the development process. The five critical validation activities include: establish criticality standards, content validation, individual trials, group trials, and operational tryouts. TP 350-70-10 gives in-depth description and detail on validation.

c. To ensure quality results from the course, personnel must ensure:

(1) Training/education is sequential and progressive.

(2) Design applies sound learning development principles.

(3) Design and development is technically correct.

(4) Student assessment determines if students can accomplish the learning objectives.

(5) Design and development includes the most efficient and effective methods of instruction, modes of delivery, and site selections.

d. The TRADOC Quality Assurance Office (QAO) website contains more information on quality assurance for courses.

Chapter 7
Lessons and Lesson Plans

7-1. Introduction to lessons and lesson plans

a. Lesson design and development is the primary activity of course development. It is important to provide a detailed, standardized lesson format to more easily share lessons across proponents. The following structure provides a framework for lesson design and development that optimizes lesson sharing and will reduce the learning product development workload.

b. A lesson is the basic building block of all instruction. A lesson is designed for learners to gain knowledge of a particular subject or the skill to perform a particular activity. Lessons are generally taught in a classroom but can also take place in other learning environments. Each lesson is a segment of instruction that facilitates the accomplishment of learning step activities that lead to achievement of a learning objective. A lesson is structured to facilitate learning and normally includes telling or showing Soldiers or students what to do and how to do it, providing an opportunity for learners to practice, and providing feedback about individual performance.

(1) A lesson is supported by a lesson plan in TDC.

(2) A lesson plan is the detailed articulation of information and resources used by instructors/facilitators to execute the instruction contained in one lesson within the prescribed time limits using the specified resources.

c. Design one lesson to support one terminal learning objective. The TLO may be supported by two or more appropriate enabling learning objectives (ELOs), depending on the lesson complexity.

d. The lesson and lesson plan must:

(1) Be current since the last review (actions, conditions, and standards have not changed).

(2) Provide adequate technical information and support material for standardized instruction and achievement of the learning objective(s).

(3) Ensure each learning activity can be assessed objectively and associated with one or more individual critical tasks or 21st Century Soldier Competency.

(4) Be structured to facilitate maximum learning by all students.

e. Instructors/facilitators, course managers, training developers, and leaders review and update lesson plans to keep them current. Proponent center or school leaders approve lesson plans per their respective policies. Instruction to be presented by a guest lecturer (a person not affiliated with the course) also requires a lesson plan.

7-2. Lesson analysis

a. Lesson design and development uses the performance specifications for the critical tasks and /or competencies identified. Acquire the individual critical task/competency analysis data for the tasks/competencies and supporting skills and knowledge. Analyze each task or competency to determine objectives that are required.

b. Lessons are most often revised from current products rather than designed and developed as new lessons. Therefore, the developer should analyze the current lesson and/or individual task (for task-based lessons) prior to redesign. This analysis is a check on how new objectives could affect the overall structure of the lesson, or the course in which the lesson resides. Once this analysis is complete, the redesign and development can begin.

7-3. Lesson numbers and titling

a. Use the analysis data gathered for numbering and titling lessons.

b. A coherent and systematic method for numbering lessons is required for managing the digital storage and retrieval of lessons that enables proponents to search, locate and share lessons effectively and efficiently. Enter the lesson title and number into the CAC-approved automated development system.

c. Lesson. The format for lesson numbers is PPPP-NNNNNNNN. The first four spaces are for the proponent school code. Only use the number of spaces necessary to display the school code. The second field of eight numbers/letters will be used to uniquely identify the lesson. When converting an individual task directly into a lesson, mirroring the lesson number to the task number will improve database search capability. When a lesson is linked to a common core task, the lesson numbering should so reflect (e.g., 805C-COM1234). In this example, the COM is an abbreviation for common core. Note how closely the lesson number resembles the task ID number, allowing for effective and efficient search capability for schools and centers that need to share that task and lesson. See figure 7-1 for lesson numbering examples.

Lesson Plan ID # Fields (2 fields)	Number Examples
PPPP = Proponent School Code (Up to 4 spaces)	171- U.S. Army Armor School 805C- Soldier Support Institute (SSI) Adjutant General School
NNNNNNNN = unique alpha-numeric designation (Up to 8 spaces)	PPPP-COMCSUIP PPPP-COMC1234

Figure 7-1. Lesson numbering examples

d. Version/edition rule. Always label the original lesson version and edition number 1.0. Change the entire version number when there is a resource change. For example, the original lesson version number would change from 1.0 to 2.0. The edition number is the second digit in the version number. When only making a minor change and no resources are changed, indicate the change using the edition number. For example, if the original lesson version 1.0 has a minor change made, the edition number becomes 1.1. The next minor change would be edition 1.2, and so forth. See figure 7-2 for version and edition protocol.

NOTE: Version numbering does NOT apply to resources changed using the Shared Lesson function of TDC.

Version Fields	Version Number Examples
Whole number + decimal + whole number	Version example: 1.0
Version with edition change	Version one, edition one: 1.1

Figure 7-2. Version/edition number protocol

7-4. Lesson titles

The lesson title describes the object or focus of the lesson. When converting an individual task directly into a lesson, using the object found in the task title of the supported task or competency as the title of the lesson enhances search capability. The title must provide complete clarity when read. Do not use the course name or a collective task name for the lesson. Following these rules will greatly improve database search capability and strengthen the relationship between supported task or competency and supporting lesson. See lesson title example in figure 7-3.

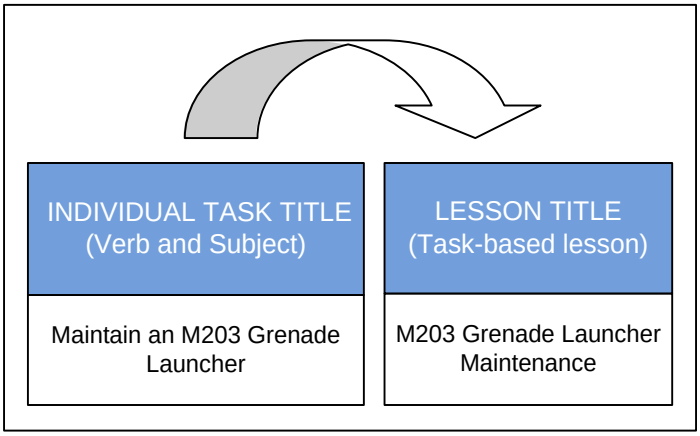

Figure 7-3. Lesson title example

7-5. Lesson design for task-based lessons

a. Lesson design identifies the optimum strategy for each individual critical task or competency, and the supporting skills and knowledge based on the associated analysis data. Lesson design translates each individual critical task or competency and supporting skills and knowledge into learning objectives. Tasks and/or competencies can be reinforced in any number of lessons, but the intent is for the lesson to support the instructor in teaching the performance steps/learning objective(s) per the designed performance measures. Follow the basic procedures below when designing a lesson.

b. Complete a lesson outline. A detailed lesson outline, which later becomes an input to the POI, includes the lesson title; number; the task/competency taught, supported, and/or reinforced; the learning objectives; and the LSAs (in the required sequence).

(1) Write one TLO per lesson. Include and sequence ELOs as necessary.

(2) Establish how to assess student performance of the learning objectives. Write test items that match the action, conditions, and standards of the learning objective(s). See chapter 8 for more information on assessment and tests.

(3) Include LSA specifications and reinforcement learning requirements. Be sure to sequence the steps/activities to provide for sequential/progressive learning.

c. Consider the lesson design complete when it is approved for development by the appropriate proponent command authority.

d. Create a lesson outline to focus the lesson and serve as the framework for the lesson plan. For a quality lesson outline, each individual involved in the design must ensure:

(1) The lesson is designed based on sound learning principles.

(a) Design is consistent with the analysis data.

(b) Learning objective(s) are correctly written (and sequenced when appropriate).

(c) Conditions are fully specified.

(d) LSAs support the learning objectives.

(e) Learning is feasible and cost-effective.

(f) Learning sequence is effective and the learning is sequential and progressive.

(g) Learner performance is measured appropriately for each TLO.

(2) Technical accuracy of content.

(3) Identification and correction of deficiencies.

(4) Incorporation of safety, risk, and environmental factors and considerations.

(5) Every effort must be made to limit the length of the lesson to an amount of time appropriate for sound educational design.

(6) When addressing multiple tasks in a lesson, ensure the lesson is designed to encompass only related tasks.

7-6. Developing and writing learning objectives

a. One of the most important steps to designing and developing lessons is developing and writing learning objectives. Learning objectives serve as the foundation for instructional design, provide the basics for instructional strategy decisions, establish clear, concise learner goals, determine content of the instruction, and serve as a basis for learner assessment. Use task or competency descriptions developed during the analysis phase. Learning objectives should reflect the task performance and supporting skills/knowledge required in the operational environment to the highest possible level of fidelity. **Note:** Do not minimize the importance of this step or the significance of the difference between tasks and objectives; learning objectives and tasks are not synonymous terms.

b. A learning objective is a three-part statement that describes expected learner performance under specific conditions to accepted standards. Write the components of learning objectives (action, condition, and standard) as statements in the CAC-approved automated development system. Learning objective components may or may not be worded the same as task component statements (task title, condition, and standard). The developer must ensure the performance of all the learning objectives taken as a whole constitutes the best, most relevant performance that can be described.

c. Types of learning objectives. The two types of learning objectives are TLOs and ELOs.

(1) Create a TLO using the individual critical task/competency identified during analysis. The TLO is the main objective of a lesson, not a module or course. The TLO describes exactly what the student is capable of performing (the action/behavior), under the stated conditions, to the prescribed standard on lesson completion. There is only one TLO per lesson, regardless of presentation method or media, and it has only one verb. The TLO may cover one critical task, part of a critical task (i.e., a skill or knowledge), or more than one critical task. A TLO may be identical to the task/competency it covers. The learning level of the TLO is always equal to or at a higher level than the ELOs.

(2) ELOs provide the prerequisite skill(s) and/or knowledge required to achieve the TLO. They are the supporting learning objectives identified in the task/competency analysis. ELOs describe the component action, skill, or knowledge that the Soldier must learn before achieving mastery of the TLO. The standard statement of the TLO will provide many of the action statements for the supporting ELO(s).

(a) ELOs are assigned letters (ELO A, ELO B, etc.) using the CAC-approved automated development system.

(b) ELOs are not required. However, if they are used, there must be at least two ELOs in a lesson.

(3) TLOs and ELOs are both composed of three parts: the action statement, the condition statement, and the standards statement. Refer to TLOs and ELOs simply as learning objectives.

d. Proponents will develop clear, concise learning objectives to describe the action, condition, and standards for learner performance. Learning objectives:

(1) Should be taught under the same conditions and standards as in a potential operational environment (OE). However, the developer and SMEs may determine that due to safety, environmental concerns, resources, or operational constraints, the operational conditions and/or standards must be adjusted for the learning environment.

(2) Serve as the contract between the learners, instructor/facilitator, and learning organization.

(3) Serve as the foundation for lesson design.

(4) Influence the MOI choice.

(5) Determine instructional content.

(6) Establish learner responsibility and accountability by giving the learner a clear comprehension of what to expect to learn and what is expected of them at the end of the session.

(7) Give the trainer a goal to achieve in presenting the content of a lesson.

(8) Form the basis for evaluating the trainer, the learner, and effectiveness of the lesson.

(9) Are thoroughly documented in the CAC-approved automated development system.

e. Learning objective action statements. An action statement specifies the competency or performance expected as a result of completing the learning objective. Begin with only one present tense, observable, measurable, and reliable action verb. The verb selected for the action statement must be compatible to the level of complexity of the action described. Although action verbs are an indication of the level of learning expected, look at the total behavioral statement (action, condition, and standard) in order to accurately determine the learning objective level because the same verb may appear in different levels of learning.

(1) It is important to comprehend and consider the three domains of learning (cognitive, affective, and psychomotor), levels of learning, and types of content when selecting action verbs for learning objectives. This knowledge can assist developers in determining the learning objectives desired for a particular target audience. Developmental levels of learning follow Bloom's Taxonomy and include knowledge, comprehension, application, analysis, synthesis, and evaluation. In using these learning levels, the lesson developer sets the intellectual depth for the content to be taught. For additional information on Bloom's Taxonomy see *Taxonomy of Educational Objectives Handbook I: Cognitive Domain* by B.S. Bloom (White Plains, NY: Longman).

(2) With the Army's emphasis on problem solving and critical thinking to develop adaptive Soldiers and military and civilian leaders (TP 525-8-2), it is important to write learning objectives at a level suitable for the content. The desired level of learning dictates the selection of the action verb in the action statement and is reflected in the criteria used to measure satisfactory performance.

(3) Ensure each learning objective action statement is the same as, or as close as possible to, that required on the job. State the action statement in terms that everyone comprehends.

(4) Use an active verb to describe the desired action or behavior. Avoid the use of ambiguous, un-measurable verbs such as "know" or "understand." Use verbs that are observable, measurable, reliable, and verifiable (refer to TP 350-70-1, App E for a list of approved action verbs). The lesson title and the subject found in the learning objective action statement will be identical or closely related. Figure 7-4 provides an example of an action statement derived from a lesson title from an individual task.

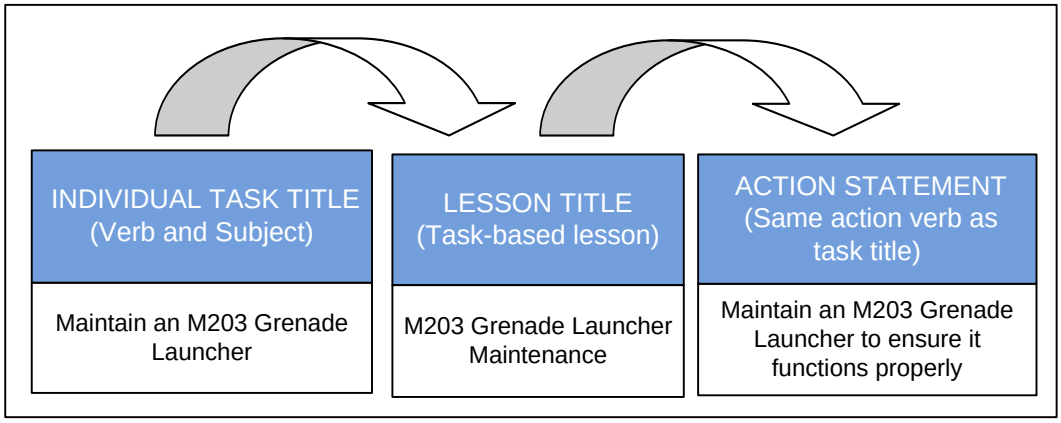

Figure 7-4. Action statement example

f. Learning objective condition statements. Condition statements set parameters that explain what to provide and what to withhold, and may be modified if necessary. They describe the setting or situation under which the objective is taught or measured, as well as the relevant factors associated with desired performance. The condition includes environment, safety considerations, resources, and constraints. Conditions should be realistic and reflect the job as closely as possible. Adjust the condition as appropriate to the learning environment. Figure 7-5 provides an example of a condition statement.

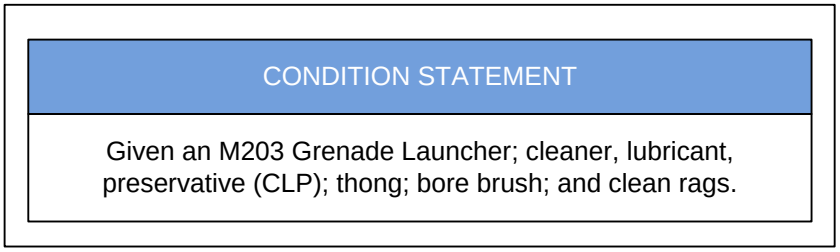

Figure 7-5. Condition statement example

g. Learning objective standard statements. The standard statement is written in present tense. It provides the criteria or degree of achievement used to measure whether learners meet the objective at an established baseline. Without good standards, a learning objective cannot be determined to be valid or reliable.

(1) Review the learning objective condition statement to determine the parameters for the standard. The standard cannot address anything outside the parameters set by the condition statement. The condition statement may have to be revised after writing the standard statement.

(2) Identify all applicable measurable standards. Measuring the performance of the entire learning objective usually requires more than one criterion.

(3) Standards are used to teach learners, assess learner performance, provide feedback, and sustain learner performance.

(4) For purposes of this pamphlet, use the following definitions to describe the characteristics associated with standards.

(a) Measurable. Standards must be capable of being measured using quantifiable or qualitative criteria.

(b) Observable. Standards must be capable of being observed by another person.

(c) Objective. Standards must minimize, to the greatest extent possible, the personal feelings, bias, or interpretation of an evaluator.

(d) Valid. Standards must be a true measurement of the learning objective.

(e) Reliable. Standards must consistently measure the accomplishment of a learning objective over multiple iterations.

(f) Usable. Standards must be convenient and practical to execute.

(g) Comprehensive. Standards must provide a complete measurement of a learning objective.

(h) Achievable. Standards must be written to allow a reasonable expectation of successful completion.

(i) Discriminating. Standards must clearly define what is considered successful accomplishment of the learning objective.

h. Table 7-1 defines the three types of learning objective standards and lists criteria to include in order to effectively assess learner performance.

Table 7-1
Types of learning objective standards

Type	Definition	Recommended criteria
Product standard	Describes the end result of the learning to be achieved. Use product standards when the process it takes to perform the learning objective is not important as long as the product (end result) is correct. Example (from Task: Construct Individual Fighting Positions): Identify each type of individual fighting position to construct hasty, deliberate, machine gun, and the AT-4 SLM fighting positions. Ensure individual fighting positions provide frontal, side, rear protection, and overhead cover. Prepare a range card for each position.	Accuracy, tolerances, completeness, format, clarity, number of errors, and quantity.
Process standard	Describes the critical elements necessary for adequate learning objective performance. Example (from Task: Maintain an M203 Grenade Launcher): Performs all maintenance steps in the proper sequence, and demonstrates that the weapon functions properly by performing all steps of the functions check in the proper sequence.	Sequence, completeness, accuracy, and speed of performance.
Combination standard	Is a combination of a process and product standard. Example (from Task: Set Headspace and Timing on a Caliber .50 M2 Machine Gun): Set headspace to ensure the GO end of the headspace gauge will enter the "T"-slot and the NO GO end will not. Set timing for the weapon to fire when recoiling parts are between 0.020 and 0.116 inch out of battery.	Accuracy, tolerances, completeness, format, clarity, number of errors, quantity, sequence, and speed of performance.

i. Once the developer understands the components of an objective, he/she is ready to start formulating objectives from the list of task statements, skills, and knowledge behaviors. The standard statement is the most difficult part of a learning objective to write. Using the information on the task list, what has been covered about objectives to this point, and the following guidelines, the developer should be able to write effective objectives.

(1) Describe the minimum acceptable level of performance learners must demonstrate to show they have mastered the required learning.

(2) Write a present-tense verb phrase to identify what the standard will evaluate (such as the process the learner performs, the product developed, or both). Then write the performance criteria that establish how well a learning objective must be performed in the learning environment.

(3) Write a standard that meets job performance requirements.

(4) Write a standard that is clear and understood by everyone.

(5) Write a standard that accurately measures learner achievement of the objective.

j. Figure 7-6 provides an example of a complete learning objective.

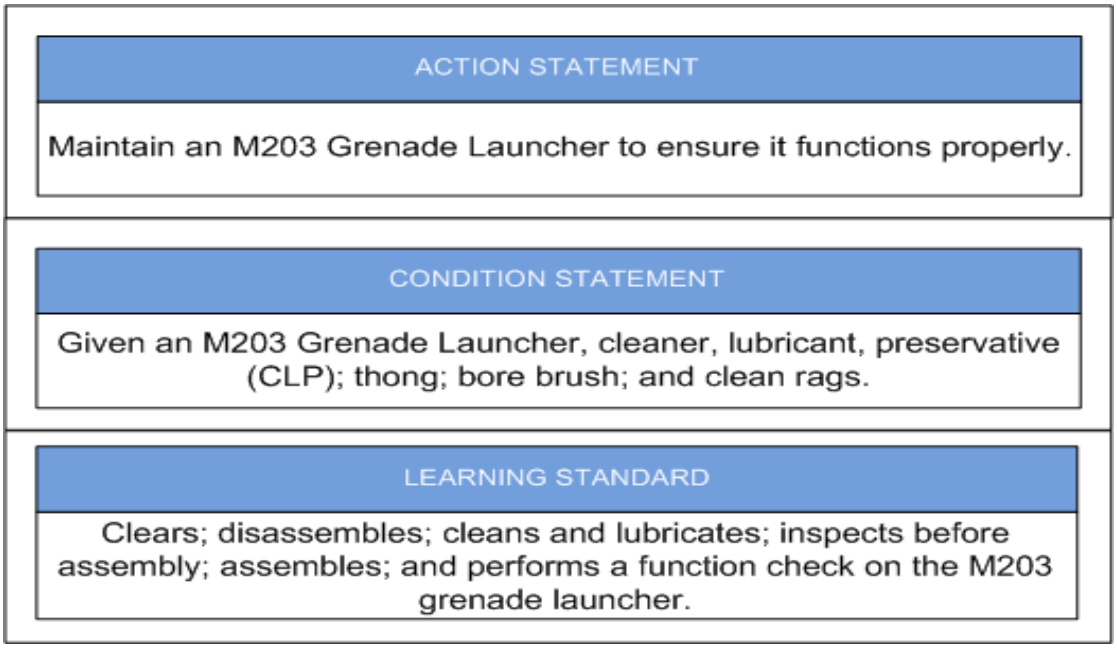

Figure 7-6. Learning objective example

k. When writing task-based standards for learning objectives, import the standard from the task and modify it for the appropriate learning environment. If the individual task or competency has multiple performance steps but no performance substeps, then design a single lesson (and lesson plan) with one TLO; the performance steps become the LSAs. If the individual task has multiple performance steps and multiple substeps, then the lesson has one TLO, the performance steps become the ELOs, and the performance substeps become the LSAs. These designs will allow developers to more easily share instructional lessons and reduce developer workload.

7-7. Sequencing learning objectives

a. Sequencing within a lesson should be based on the prerequisite relationship among the learning objectives; that is, the order in which the learning objective(s) should take place. The most obvious sequence follows the order from simple to complex or from general to specific.

b. Guidelines for sequencing objectives. Grouping objectives in a logical fashion promotes efficiency in the course structure. For example, skills (physical and cognitive) and knowledge generally need progressively more complex and controlled media and facilities. Logical grouping reduces the time between the instruction of dependent objectives. Use supplemental learning materials, instructional interventions, and reinforcement strategies as appropriate to support learning requirements. Course developers may use various criteria for selecting sequencing logic. Examples include sequencing by subtasks, by time requirement, the most to least important task, by the order in which the tasks must be performed, and easiest to the most difficult to accomplish. For a more complete list of objective order, see table 7-2 below.

Table 7-2
Learning objective to lesson plan relationships

Relationship	Example
Job performance order	Actions having a prescribed order such as assembly and disassembly of a weapon or loading a tank's main gun.
Chronological order	Actions required for planning time relationships of events, such as identifying chemical agents using the M258 kit, where samples must be analyzed at specific times during the process to determine agent type.
Cause and effect order	Actions required to achieving a desired effect, such as properly utilizing demolitions (cratering charge or abatis) to block a road. This technique can also be used to demonstrate how improper actions can have a negative effect, such as how poor driving habits can lead to accidents.
Critical order	Tasks requiring an important action such as "clear weapon before starting disassembly".
Simple-to-complex order	Tasks requiring simple task performance in order to master complex tasks such as learning to use a compass and read a map before conducting land navigation.
Complex-to-simple order	Tasks requiring comprehending the existence of a complex structure in order to give meaning to the mastering of the simpler actions supporting the task. An example is learning and understanding the overall military decision making process (MDMP) before conducting the individual steps of the process.
Known-to-unknown order	Military commercial vehicle maintenance precedes maintenance of lesser known military specific vehicles.

c. Sequencing for efficiency. Another rationale for sequencing instruction is the most efficient use of resources, particularly time. Objectives may be instructed concurrently if doing them sequentially would require additional or extensive facility/training site preparation. Training and education developers must achieve a balance between the requirements for effectiveness and avoiding excessive costs.

7-8. Learning step activities (LSAs)

a. Design the lesson to ensure each LSA and assessment is based on a learning objective, includes supporting knowledge, and is associated with one or more tasks or ALM-defined 21st Century Soldier Competencies. Additionally, task-based lesson plans must identify at least one applicable skill for which an LSA would be written. Table 7-3 provides LSA examples:

Table 7-3
Learning step activity examples

If the method is -	Then the learning step activity would have the learner -
Role play	• Act out a specified situation.
Discussion	• Analyze a specific subject or situation. • Discuss a specific subject or situation. • Describe a specific subject or situation. • Identify a specific subject or situation.
Demonstration	• Participate in the demonstration. • Observe the demonstration.

b. Develop LSAs for each learning objective and sequence them to maximize learning. The developer sequences LSAs by assigning numbers (LSA 1, LSA 2, etc.) using the CAC-approved automated development system. See Appendix F for an example/job aid for sequencing LSAs. There should be no LSA in a lesson that does not directly support a learning objective. LSAs also provide a structured means to focus learning on a small part of what a student needs to learn, and provide the basis for identifying specifications, including such items as the method of instruction and resources required to present the lesson.

c. LSAs should include any mandatory time requirements (for example, due to task performance standards).

d. Outlining LSAs to support the learning objectives concludes the lesson design. The development phase of ADDIE for lessons begins with developing and sequencing the LSAs.

7-9. Developing the LSAs
Development of the LSAs includes identifying the resource requirements for LSA specifications. Table 7-4 identifies resource requirements to consider during LSA development.

Table 7-4
Identification of resource requirements for LSAs

Resource	Actions
Equipment	• List instructional aids needed to accomplish instruction (equipment, weapon systems, tools, trucks, etc.). Provide specific nomenclature and quantity requirements. State if there are none. • Identify equipment-to-instructor and equipment-to-student ratios.
Materials	• List required reading for instructors/facilitators. List materials required for instructors/facilitators that do not fit under the preceding section. These are materials that instructors/facilitators and learners must have (maps, compasses, forms, etc.). List civilian reading materials by type, title, author, page numbers, date of publication, and publisher. Provide an Army source with complete mailing address, phone number, e-mail and other required information to obtain any civilian materials listed. • Identify materials-to-instructor and materials-to-student ratios.
Supplies	• Identify any supplies needed to conduct the LSA. Include those needed by instructors/facilitators and learners (paper towels, rags, pencils, tablets, calculators, etc.). • Identify supplies-to-instructor and supplies-to-student ratios.
Student handout requirements	• Identify any handouts that need to be printed versus those that can be provided online. • Identify length of time to print, number needed per course, and cost of printing.
Operational tempo (OPTEMPO) requirements	• Identify the operating miles/hours for systems to teach this LSA. State in terms of the miles/hours for the major system in a unit; however, all equipment generating significant operating and support cost has an established OPTEMPO. Therefore, you need to identify the requirements for each applicable system.
Ammunition	• Identify the ammunition requirements to teach this LSA. State if there are none.
Learning environment/ classroom requirements	• Identify all the requirements for the location where the instruction will take place. Include size requirements as well as universal stock numbers, as appropriate.
TADSS	• Identify the identification number of each TADSS used to teach the LSA, if applicable. • Identify the title of the TADSS. • Identify the TADSS-to-student ratio and include the instructor/facilitator requirements.
Supporting personnel requirements	• List the number of instructors/facilitators, demonstrators, and/or assistant instructors/facilitators required to teach the LSA. It is important to note that instructor contact hours (ICHs) are matched to LSAs in TDC for resourcing. Identify any special qualifications (certifications, skills, knowledge, behaviors, etc.) they must possess. Include any additional support personnel and their qualification requirements (such as bus drivers, audiovisual equipment operators, range operators, etc.).
Additional resources	• There may be additional resource requirements such as opposing forces (OPFOR) and role players to support implementation. Compile and include total resource requirements in appropriate training plans, lesson plans, POIs, and TSPs.

7-10. Lesson plan development

a. Once the lesson design is approved, develop the lesson to include all the details required for the presentation. Lesson design and lesson development functions can sometimes be conducted simultaneously. Take great care when using this approach to ensure the lesson is built on and reinforces previous learning as appropriate. The design and development must provide for vertically aligned learning, that is learning builds to higher skill/competency levels and reinforces previous learning as necessary.

b. The lesson plan contains the detailed information and activities used by instructors/facilitators to execute the training and education within prescribed time limits. A lesson plan supports one lesson so that lessons can easily be shared across the Army to support additional modules, phases, and courses.

c. Lesson plans are critical components of the course development process. A basic lesson plan supports the lesson content and ensures the overall efficiency and effectiveness of the lesson. The lesson plan organizes the administrative data and resources for what, when, and how to present the material. The lesson plan communicates the intent and how to implement the instruction to the instructor/facilitator. Write lesson plans from the instructor's/facilitator's viewpoint.

d. The lesson plan also identifies other requirements for a lesson including the introduction, content, summary, and appendices. The lesson plan includes all administrative and resource data identified in the design and development of the LSAs. Lesson plan development requires, at a minimum, entering the following information for the LSAs in the CAC-approved automated development system lesson plan format:

(1) Modes of instructional delivery.

(2) Instructional strategy and MOIs.

(3) Instructor to student ratio.

(4) Lesson academic hours.

(5) Media.

(6) Resource requirements.

(7) Student assessment and testing requirements.

(8) Administrative data.

7-11. Modes of instructional delivery for lessons

a. When developing the lesson plans, remember that the course design may have created modules and/or phases to allow the instruction to be provided via different delivery options. The three primary modes of lesson delivery are face to face, online, and blended.

b. The primary considerations for delivery during lesson plan development include:

(1) Requirement for interaction (physical, verbal, visual) between the student and instructor.

(2) Approved lesson plan(s) for instructor/course manager use (if available).

(3) Approved self-paced lesson and supporting media/materials for student use, e.g., correspondence course, IMI.

(4) Home study and other student assignments ready for issue to the students in support of instructor-led instruction including practical assignment sheets, student handouts, and home study assignments.

(5) Media products ready for use (e.g., digital slides, digital video).

(6) Assessments, tests and practical exercise guidance.

c. The developer adds as much detail as needed to allow for:

(1) Any new or substitute instructor to use this lesson plan with no degradation of training and with minimum preparation time.

(2) Any student to meet the learning objective standard for a self-paced lesson (e.g., lesson for correspondence course, programmed text, or IMI) without the assistance of an on-site instructor.

7-12. Instructional strategy and methods of instruction (MOIs)

a. An instructional strategy helps organize and specify the learning activities, MOIs, and how to deliver the content. The strategy should include pre-instructional activities, presentation of information, practice and feedback, assessments, and follow-through activities. Instructional strategies emphasize concepts, theories, relationships, ideas, and generalizations and are designed to achieve an overall goal of imparting knowledge using particular methods of instruction. The method of instruction is a type of activity used to facilitate the accomplishment of a learning objective(s).

b. The ALM calls for outcome-oriented instructional strategies that foster thinking and initiative, provide operationally relevant context, and best fit the learning audience and range of desired outcomes. There are five primary instructional strategies that support the ALM by

inculcating 21st Century Soldier Competencies. Select the instructional strategies that align with available instructor/facilitator resources, target audience analysis, command guidance (e.g. use of ALM) and learner throughput requirements. Selection of an instructional strategy will impact the developer's MOI, media selection, and potentially the time of instruction. Instructional strategies include:

(1) Direct instruction. Direct instruction is often through instructor/facilitator-led lecture with explanations, examples, and opportunities to practice and provide feedback. Any information for which there is one right answer, and for which that answer is relatively simple, can be taught efficiently and effectively by using direct instruction. This strategy emphasizes the use of carefully sequenced steps so the learner can master a new fact or rule before moving on.

(2) Independent study. Independent study is a learning experience that is supervised and controlled by a specialist in the subject, but allows learners to study an agreed upon subject autonomously. Independent study is sometimes referred to as directed study, as it shifts the responsibility for learning from the instructor/facilitator to the learner. It is most frequently used when a learner and a teacher agree upon a topic for further learning.

(3) Indirect instruction. Indirect instruction influences the learner to construct knowledge rather than learning material from an instructor. The learner-constructed response differs from the content being used to present the material and any previous response. As with independent study, indirect instruction shifts responsibility for learning from the instructor/facilitator to the learner. See uses and related MOIs in table 8-3 for further understanding of this strategy.

(4) Collaborative/interactive instruction. Collaborative/interactive instruction relies heavily on discussion and sharing among participants. It is important for the instructor/facilitator to outline the topic, the amount of discussion time, the composition and size of the groups, and reporting or sharing techniques. The success of the collaborative/interactive instructional strategy and its many methods is primarily dependent upon the expertise of the instructor/facilitator in structuring and developing the dynamics of the group.

(5) Experiential learning. Inductive, learner-centered, activity-oriented, personalized reflection about a learning experience and formulation of plans to apply learning to other contexts are critical factors in this strategy. Experiential learning can be viewed as a cycle consisting of five necessary phases. These phases are concrete experience (a trigger of past experience and knowledge); publishing and processing (reactions and observations are shared); generalizing new information (focuses on content and methodology); developing (student-centric focusing on how the lesson will be valuable to the student); and applying (plans are made to use learning in new situations). The key for lesson development is that the lesson plan must contain sufficient detail regarding the five phases to help the instructor/facilitator to enable the learning process.

c. The MOI is a component of the instructional strategy. The MOI is a type of activity used to facilitate the accomplishment of a learning objective(s), is minimally associated with each lesson and is commonly associated with each LSA. Appendix F provides an example of cross-walking multiple MOIs and LSAs in support of a learning objective. Selection of the MOI requires consideration of the learner, the content, the goals, the learning environment, the instructor/facilitator, and the available resources. Specific MOIs require varying degrees of learner participation. While particular methods are often associated with certain strategies, some methods may be found within a variety of strategies. The primary uses and suggested methods of instruction used with each instructional strategy appear in table 7-5[1]. Appendix G further discusses and defines the MOIs noted in table 7-5.

Table 7-5.
Instructional strategy uses with suggested MOIs

Instructional Strategy	Uses & Suggested Methods of Instruction
Direct instruction	**Uses:** This strategy is most effective at teaching knowledge acquisition involving facts, rules, and action sequences. **Suggested MOIs:** compare and contrast, demonstration, drill and practice, guided reading and thinking, lecture, structured overview, tutorial
Independent study	**Uses:** Generally involves research outside of a school setting for an agreed upon amount of credits, this strategy can be self-paced, and can overcome geographical barriers. **Suggested MOIs**: interactive multimedia instruction, tutorial, writing assignments
Indirect instruction	**Uses:** This strategy is best used when presenting concepts, abstractions, or patterns, and when the learning process is inquiry-based, the result is discovery, and the learning context is a problem. Instruction helps learners develop content organization, inductive and deductive reasoning, personal experience(s), and group discussion skills. **Suggested MOIs:** brainstorming, case study, concept mapping, inquiry, problem solving, reflective discussion, tutorial, writing assignments

[1] Saskatoon Public Schools (2004-2009), Instructional Strategies Online, Retrieved with permission from http://olc.spsd.sk.ca/de/pd/instr/experi.html

Table 7-5.
Instructional strategy uses with suggested MOIs, continued

Instructional Strategy	Uses & Suggested Methods of Instruction
Collaborative/interactive instruction	**Uses:** Students learn from peers and instructor/facilitators to develop social skills and abilities, to organize their thoughts, and to develop rational arguments. Allows for a range of groupings and collaborative/interactive methods. Collaborative/Interactive instruction requires the refinement of observation, listening, interpersonal, and intervention skills and abilities by both instructor/facilitator and learners. **Suggested MOIs:** brainstorming, cooperative learning groups, debates, discussion (small or large group), interviewing, laboratory groups, panel, peer partner learning, problem solving, role playing, seminar, tutorial
Experiential learning	**Uses:** The emphasis in experiential learning is on the process of learning and not on the product. Experiential learning helps to develop inductive reasoning, analysis, personal reflection, formulating plans, speaking and writing, and lifelong learning attitudes. **Suggested MOIs:** case study, conducting experiments, field observations, field trip/site visit, gaming, model building, practical exercise (hands-on/written), role playing, simulation, storytelling

7-13. Instructor-to-student ratio and instructor requirements

a. Determine the instructor-to-student ratio (ISR) based on the MOIs and delivery techniques. For problem-based, learner-focused courses, as described by the ALM, ratios of 1:8 or 1:16 will be most common. Table 7-6 contains factors to consider when establishing ISRs.

Table 7-6
Instructor-to-student ratio factors

Factor	Examples
Restrictions imposed by equipment	Interior of a tank. Noise of a generator.
Safety factors	Teaching self-contained underwater breathing apparatus (SCUBA) divers in a dive tank may require one instructor/facilitator per two learners (1:2). Teaching a Soldier to throw a live grenade requires one instructor/facilitator per learner (1:1).
Regulatory ratios	The ALM, TR 350-10, and TP 350-70-9 provide guidance on instructor-to-student ratios for courses and instructional designs. TP 350-70-9 also covers how to determine the most restrictive ISR for RC schools.
Facility limitations	Capacity. A classroom may be limited to 20 seats (1:20) or justification is required for additional instructors/facilitators for PEs. Utilities. A classroom may have electrical and/or network wiring limitations, etc. that limit use of the classroom to designated numbers of learners for certain types of instruction. For example, a classroom with 20 network jacks can only support 20 devices for simulation or gaming instruction (1:20).
Equipment ratios	Equipment-specific ratios must be approved by a TRADOC review of manpower (TP 350-70-9).
Instructor limitations	Instructor span of control is based on instructor ability to adequately manage the class size and/or provide ample feedback to the students in attendance.
Note: The instructor-to-student ratio is published in the POI and lesson plan, and validated by Training Operations Management Activity.	

b. Ensure you properly list instructor/facilitator requirements. Include the number of instructors that are required to instruct a task or competency. Identify any specific qualifications the instructors must possess (e.g., instructor MOS, skill(s), certifications, and other special qualifications). Additional information regarding instructor/facilitator certification and qualification appears in TR 350-70 and TP 350-70-3.

7-14. Lesson academic hours

Identify lesson length in academic hours. An academic hour is a 60-minute time block consisting of 50 minutes of instruction and 10 minutes of administrative time. Lesson length is the sum of the LSA's time of instruction in minutes, but does not include administrative time. As an example, if the lesson length is 100 minutes, it will take two academic hours to complete. Refer to TP 350-70-9 for additional information.

7-15. Media

a. Media are any means or instrument of communication (auditory, visual, or written) that facilitates or enhances a lesson, or a part of a lesson, to demonstrate or clarify course content and to facilitate learning. Media are mechanisms to communicate learning content. Media can also serve as a means of storage for instructional material. Using a variety of media may respond to the needs of those who receive information in different ways. No single medium can support all instructional strategies. Therefore, the instructional designer may choose a combination of media to meet the learning objectives and support the method of instruction. The USDLA – U.S. Distance Learning Association – recognizes three principal modes of media to facilitate learning: visual, aural and a combination. The link to the USDLA website is provided in the glossary and on the TED-T website.

b. When selecting media, consider the following:

(1) Instructional effectiveness. The first media selection criterion must be its effectiveness in delivering required instruction to established performance standards. There may not be one best medium, but all media must pass through this effectiveness gateway to qualify for further consideration. If the course contains key technical information, processes, and procedures pertaining to the learner's functional area or develops a perishable skill, consider a medium that will be easily accessible from the field throughout the learner's career.

(2) Practicality. The intended media should be readily available, cost effective, time efficient, and understood by the instructor/facilitator.

(3) Affordability. To achieve training and task performance proficiency, media selection should focus on learner interaction with an instructor/facilitator or a peer rather than on those media that require high fidelity. Consider costs related to procuring equipment, developing and implementing the lesson, and keeping the lesson up to date.

c. Table 7-7 provides general descriptions and other information regarding media. The media descriptions also incorporate various MOIs and instructional uses. It is acceptable to use media not listed in the table.

Table 7-7
Media descriptions and instructional uses

Media	Descriptions and Uses
Video	**Description:** Video uses moving images as a means to deliver the instruction. The video is introduced verbally or with text. Learners are informed as to what they are to learn from the video. Video has the advantage of presenting abstract ideas in a realistic context, which helps learners grasp the abstract ideas more easily and to retain the material longer. **Uses:** Use video to demonstrate processes, procedures, and behaviors that can be difficult to describe. Use it to provide real world context, present information in a rich format, offer a sensory-rich experience, and appeal to visual learners.
Printed material	**Description:** Printed documents can be distributed to learners. These can include, but are not limited to, documentation, forms, manuals, learner guides, job aids, and graphic training aids. **Uses:** Use printed materials in situations where learners require reference to documents for use in the course or subsequent job performance. They work well in asynchronous, self-paced learning environments.
Graphics	**Description:** The purpose of most instructional graphics is to help explain something to the viewer in a manner that increases retention of the subject matter. Graphics can include photographs, drawings/illustrations, charts/graphs, 3D graphics, logos, icons, banners, and symbolic elements. **Uses:** Guidelines for using graphics include using contrast to support visual cues, reinforcing key concepts, displaying essential elements to maintain learner focus, and keeping graphics in close proximity to related content.
Programmed Interactions	**Description:** Programmed interactions include animations; interactive tutorials; tools such as drawings and displaying concepts and student's aids; drag and drop media; calculators; scenarios; games and simulations; and self checks and assessments. **Uses:** Guidelines for using programmed interactions include keeping focused on learning goals; facilitating clear learning paths; allowing for learner pacing; eliminating irrelevant information and interactions; maintaining a clean design for easy learner focus; and providing learner support tools, feedback, and visual and textual cues.
Audio	**Description:** Audio includes the recorded sound of a podcast, narrated lectures, presentations, interviews, guest speakers, synchronous audio conferencing, music, sound effects, or other primarily verbal communication. **Uses:** Audio appeals to aural learners, stimulates mental conceptualization and learner imagination, adds credibility/authority to the presentation, and focuses learner attention.

7-16. Media delivery

a. Instructional media can be delivered to the intended audience in a variety of communication formats. The media communication format should be based on the needs and preferences of the target audience, costs of production, and the specific educational purpose. Examples can be found in figure 7-7. Figure 7-7 uses the same media as table 7-7, but further identifies communication formats for these media.

Media communication formats
Video communication formats include: Web-based streaming; Web-based download; optical media including but not limited to CD-ROM, DVD, Blu-ray disc; broadcast or network television; and video tele-training.
Printed communication formats include: Web-based download, hard-copy in situations where learners will be effectively offline, and optical media to include CD-ROM, DVD-ROM, BD-ROM.
Graphics communication formats include: live at instruction site; Web-based streaming; download of graphic files such as GIF, JPEG, PPT and hard-copy.
Programmed interactions communication formats include: live at instruction site, Web-conferencing tools, Web-based streaming, instructional television, and computer-based instruction.
Audio communication formats include: live at instruction site; Web conferencing tools; Web-based streaming or download of audio file; and telephone or conference call.

Figure 7-7. Media communication formats

b. Developing media. The lesson outline includes the types of media that require development. However, it is common to adjust the media requirements during development. Ensure that any changes to media requirements are developed within available resources. If new media need to be developed, the following steps should be considered:

(1) Assemble a team for media development that has the required skills and capabilities. Ensure resources are planned, programmed, and budgeted for successful media development. This may require contractor support. Refer to IMI requirements for media development. See TP 350-70-12 for more information.

(2) Ensure team members have a shared comprehension of how to use media to contribute to overall learning.

(3) Provide media development guidelines and standards to the development team. Ensure all team members have a copy of any templates, style guides, and file-naming conventions that will be used for development.

(4) The abundance of multimedia available through the Internet increases the risk that team members may use copyrighted material during development. Review copyright

restrictions, procedures for obtaining copyright clearance, and sources of media that are not copyright restricted, such as .mil sites, with the team. Additional information on copyrighted materials appears in Chapter 2.

c. Specific steps for developing various media are often dependent on the tools used for development as well as the development team's capabilities. Rather than provide specific steps, table 7-8 provides considerations and some basic steps for developing various forms of media. This list of media is not exhaustive.

Table 7-8
Guidelines for developing new media

Media	Considerations	Basic steps
Text	• Use consistent terms and language that students comprehend. • Use common, easily readable fonts such as Arial or Verdana and ensure the font size is easily readable. • Use larger font sizes for titles. • Use bold text to draw attention to key terms or sections. • If the text will be delivered on a computer, then refer to TRADOC graphical user interface specifications (http://www.atsc.army.mil/itsd/imi/GUI.asp). • Place text that describes a graphic within the graphic or as close to the graphic as possible. • Avoid showing screen text (other than titles) while a narrator is talking.	• Draft/write material. • Edit material. • Publish material.
Sound	• Use consistent terms and language that students comprehend. • Do not use a narrator with an accent that is not native to the language being used. • Do not use music or other sound effects when the narrator is talking. • Avoid having text on the screen (other than titles) while the narrator is talking. • Avoid reading screen text. • Use the lowest sampling rate that produces the desired quality in order to keep file sizes small. • Use standard audio formats.	• Storyboard or script narration and other sound requirements, such as sound effects or music. • Edit scripts. • Record sound. • Edit sound. • Publish sound.

Table 7-8
Guidelines for developing new media, cont.

Media	Considerations	Basic steps
Images	• If an image will be used in a printed media, then use a high resolution to improve print quality. • If the image will be used in electronic media, then use the lowest resolution that provides the required image quality. • Integrate titles and descriptive text with the image. • Use standard image formats. • Use standard colors and ensure there is sufficient contrast between background colors and the image. • Ensure the image directs the students' attention to the key aspects. • Avoid using images that do not directly contribute to learning; for example, background images.	• Storyboard or describe the image. • Develop and edit the image. • Publish the image.
Video	• Use video to describe motion, show relationships, or increase immersion. • Keep video segments short. • Carefully review storyboards and scripts before recording. • Record scenes multiple times to ensure you have footage for editing. • Use the lowest sampling rate and resolution that produces the required quality if the video will be used online.	• Storyboard or script video. • Edit storyboards and scripts. • Plan video recording. • Develop required sound for the video. • Shoot and edit video. • Publish video.
Animation	• Use animation to describe motion, show relationships, or increase immersion. • Give students control of the animation; for example, start, stop, and replay. • Use cues, such as arrows, to focus attention on the salient part of the animation. • Publish animations in standard formats. • If encoding animation as video, use the lowest sampling rate and resolution that produces the required quality if the video will be used online.	• Storyboard or script animation. • Edit storyboards and scripts. • Develop and edit animation. • Publish animation.

d. TP 350-70-12 and The Army Distributed Learning Program (TADLP) website contain specific guidelines for particular forms of media, particularly interactive multimedia.

7-17. Required resources

Required resource information includes, but is not limited to, equipment required to conduct the lesson (such as a laptop computer with computer interface or a projection screen), instructor materials (such as handouts), and ammunition types and quantities (if any). TP 350-70-9 contains additional information on resources for lesson plan development.

7-18. Measuring learner performance: assessment

a. Assessment design and development is part of the design phase of a lesson. Assessment design should begin immediately after writing the learning objectives because they impact the lesson design and development.

b. Upon completion of LSA development, it is appropriate to revisit the student assessment plan, tests, and test items, and complete any further development needed. Be sure the methods of assessment measure the learning objectives to the stated standards or level of attainment. Verify or adjust the lesson design, development, or assessments to be sure the standards are achievable based on the assessment(s).

c. A detailed discussion on assessment is in chapter 8.

7-19. Administrative data

a. The administrative data section in the automated system includes required lesson identification information as well as an understandable title with only one objective. Other required information in this section includes identifying the modules, phases and/or courses that link to the lesson plan, tasks taught or supported, reinforced tasks, required knowledge, and skills taught. Other mandatory entries include the clearance access, FD statement, and current references. The instructor/facilitator requirements not only list the number of instructors/facilitators, assistant instructors, and demonstrators, but also the specific MOS, skills, certifications, and other qualifications required of instructors/facilitators to teach the respective lesson. The introduction includes identifying an appropriate method of instruction.

b. Required references. List all the references (to the paragraph level where practical) used to develop the learning product. List the civilian sources by the type of source (book title, magazine, etc.), title of article (if appropriate), author, page numbers, and date of publication. Provide a source for any military references including reference number, title, and date. Follow all copyright guidance as described in paragraph 2-6.

c. Other required information includes any additional support requirements and the name, grade, position, and approval date of the approving authority for the lesson.

d. The conclusion includes a summary, re-motivation, and closing. Classified courses include a classification reminder in the conclusion.

e. Review/Summary. Develop an appropriate review/summary. This section should contain actual review/summary material, not just a directive for the instructor to conduct a review of the lesson.

f. For a sample lesson plan, refer to the example listed under the "Products" tab on TED-T.

7-20. Quality control for lesson plans

a. For a quality lesson/lesson plan, development must be consistent with the design and analysis data, and the technical accuracy of content must be verified. The instruction must be feasible, cost-effective, sequential, and progressive; the learning sequence must be effective; and deficiencies must be identified and corrected. Table B-3 contains a checklist for evaluating a lesson plan.

b. Each training proponent will establish quality control review points in production processes. The goal of quality control is to eliminate defects as early as possible in the process to minimize rework. Management will establish performance standards (efficiency/effectiveness) which will be used to determine defects at quality control review points. Administer quality control procedures as part of the normal work process. Periodically conduct a review of quality control procedures to ensure defect control processes are appropriate. Use quality control data to determine process changes, staff training requirements and administrative procedure improvements as necessary.

Chapter 8
Assessment

8-1. Measuring learner performance: assessment

a. Assessment is the measurement of learning by an individual; whether or not skills, knowledge, and/or performance have been attained; as compared to the term evaluation which is the measure of a product's performance. Assessment of a learner is often accomplished through a test of whether or not skills, knowledge and/or performance have been attained.

b. Formal and informal assessments, including checks on learning, provide the means for identifying performance deficiencies and efficiencies of the learner.

(1) The formal assessment typically employs a test, quiz, written document, or other means of evaluation selected by the instructor. A numerical score or grade is assigned based on student performance.

(2) Examples of informal assessment could include but are not limited to periodic instructor feedback, after-action reviews (AARs), peer feedback,

(3) Formal and informal assessments may include forms of measurement such as observation, inventories, checklists, rating scales, rubrics, performance and portfolio assessments, participation, peer evaluation, and self evaluation. Conduct assessments through the systematic collection, analysis, and application of feedback concerning the relevance and effectiveness of learning. Assessment of learners supports the accreditation process and ensures an institution is conducting training and education adequately and to course standards.

8-2. Assessment methods

a. The primary purpose of assessment is to verify the learner has attained the skills and/or knowledge specified in the TLO(s). The two methods of assessment most often used in the U.S. Army are hands-on performance tests and the application of knowledge-based written tests. Performance assessment includes a performance task, a learner response, and a predetermined rubric or grading system. A performance assessment tests a learner's actual application of knowledge and skills. Both factual and procedural knowledge are important components of a complete assessment process. The TLO determines the preferred method of assessment. Table 8-1 gives explanations of each method and reasons for their use.

Table 8-1
Test methods

Method	Description/Use
Hands-on performance tests	Requires learners to prove competency by using actual equipment, materials, simulators/simulations, or training aids to perform the required learning objective.
	Hands-on job performance tests have intrinsic validity because of their high fidelity to job knowledge and skill. Hands-on test content is preferred for initial entry personnel on many tasks, but less appropriate for personnel with more experience.
Knowledge-based written tests	Used to assess the learner's ability to apply and synthesize facts, principles, and procedures required to perform the TLO.
	Uses essay, short answer, and multiple-choice performance-based questions. Used to assess mastery by assessing the comprehension and application of new knowledge and skills at higher cognitive levels.
	The TLO determines if a knowledge-based written test is the most beneficial assessment tool.
	Verifying a learner's prerequisite knowledge is often accomplished by written tests.
	Create all knowledge-based written tests to be a valid measure (predictor) of understanding task performance.

8-3. Test types
The two major types of tests used for assessment are criterion-referenced and norm-referenced.

a. Criterion-referenced test (CRT). CRT determines if learners can perform to established, well-defined training standards or criteria. TRADOC and associated service schools must use CRTs to determine learner competency and to determine if the training program or lesson trains individuals to standard. A CRT measures an individual's ability to successfully perform the action specified in the learning objective. Compare the learner's performance to the learning objective standard. The score is based upon absolute standards and provides learner scores/grades as "GO" (pass)/"NO GO" (fail). The test scores should establish whether the learner has mastered the supporting skills and knowledge required to perform the learning objective and determines if the learner is ready to move to the next lesson or module/block of instruction. CRT can also be used as a diagnostic tool to determine the entry-level performance capability of a learner. This can provide the start point for follow-on training and organizing learners for the training. In addition, it allows for testing out of lessons, modules/blocks, or an entire course if the learner can demonstrate that he/she possesses the required skills and knowledge outlined in the TLO. CRT will allow classification of individual learners into two groups, performers and non-performers. Performers are learners who can (reasonably be expected to) do what they were trained to do. Non-performers are learners who cannot adequately do what they were trained to do.

b. Norm-referenced tests. The norm-reference test compares a learner's performance with the performance of other learners (or the norm). The American College Test used for college eligibility is an example of a norm-reference test. Norm-reference tests measure an individual's performance against the performance of other individuals taking the same test. It does not establish if the learner can perform a specific task or learning objective to the established standard. Army training will not use norm-referenced tests to measure learner performance. However, norm-based aptitude tests like the Armed Services Vocational Aptitude Battery (ASVAB) can be used to establish parameters for predicting success within specific MOS.

8-4. Student assessment design and development

a. As the continuous adaptive learning model further expands learning opportunities beyond the traditional classroom, considerable care must be taken to develop secure, technology-enabled, integrated assessments tailored to content and expected outcomes. Both the traditional classroom and distributed learning locations should use pre-test and post-test activities to measure learner skills and knowledge. Pre-tests allow instruction to be tailored to the learners' needs and experience and create a method to allow Soldiers to test out of instruction when they demonstrate mastery. Post learning assessments provide both the supervisor and the learner certainty that learning has occurred to standard. Results can be fed into automated tracking systems to provide near immediate feedback and record updates. Subjective assessments can add a valuable source of feedback on qualities and characteristics not easily measured through objective assessments.

b. As noted in chapter 7, assessment design and development is part of the design phase of a lesson. Assessment design should begin immediately after writing the learning objectives because they impact the lesson design and development.

(1) Assessments may be a stand-alone lesson or an integral part of a lesson or LSA. There is no requirement to conduct a specific assessment at a specific point in a course. They may occur anywhere in the course.

(2) Use assessments, at a minimum, to verify learning of each TLO. When assessing TLOs simultaneously with other TLOs, design the assessment to ensure it determines student mastery of each TLO.

(3) Assess TLOs sequentially if a TLO is a supporting skill or knowledge (prerequisite) for a later TLO. Assess the supporting TLO (skill or knowledge) first, to ascertain the students' readiness for instruction and assessment on the supported TLO.

(4) Normally each TLO is assessed for mastery once as a pre-assessment and once within the course. However, multiple successful repetitions of the required action during that one assessment session constitute mastery of the task. If you defined an accurate mastery standard, the student met that standard, and the course is sequential and progressive, then the learning has previously occurred. Then, allow the use of the previously learned knowledge or skills in later portions of the course. However, you may decide to conduct another assessment of the same objectives, if you wish to reinforce the previously taught TLO(s) and verify learning of the previously taught TLO.

(5) End-of-phase assessments are recommended for courses with significant time gaps between the end of one phase and start of another.

(6) Validate the assessments of TLOs for effectiveness. The effectiveness of the lessons and objectives are evaluated using criticality standards. The criticality standard specifies the percentage of students who must pass each objective the first time upon completion of the lesson for that objective. If students do not meet this standard, the learning product and components will not be validated and will require revision. Refer to TP 350-70-10 for information on validation processes and conducting individual, group, and operational trials for validating lessons/objectives.

(7) Developers may design and develop assessment of student performance on ELOs/performance steps to support learning. These assessments can be formal tests, or informal "checks on learning" to determine if students are progressing appropriately toward achievement of the TLO. A "check on learning" can be as simple as asking one or two review questions or as complex as asking students to demonstrate skill performance.

(8) When developing an assessment for a lesson or a check on learning:

(a) Write a full description of the assessment, details on how the student will perform the assessment, special requirements, and grading criteria.

(b) Provide remedial training for incorrect responses to test questions/exercises.

(9) For self-paced instruction, include assessments in the course materials in accordance with the design. Include remedial instruction for incorrect responses to assessment questions or exercises.

(10) Table 8-2 outlines the process used to produce an assessment.

Table 8-2
Assessment production guidelines

Steps	Action
Review the terminal and enabling learning objectives (TLOs and ELOs).	Determine whether performance or performance-based items can/will be used to test each TLO/ELO selected for testing.
Decide what test items are required for the assessment.	Determine if application, analysis, or problem-solving test items are required. Skills/performances will be tested at the application level or above.
Determine the quantity, type, and weight of CRT/test items that will be used for each TLO/ELO assessment.	Consider hands-on performance, knowledge-based written, or a combination of the two.
For performance assessments, include:	• Type of measurement to be used (product, process, or combination). • Resources required (time, manpower, costs of alternatives, equipment, facilities, and environment). • Constraints (resources, safety, and environmental) and their impact. • Possible alternative performance conditions and which ones will be tested. • Number of successful repetitions of performance required to achieve a "GO" (if necessary). • Level of fidelity possible considering the above. • For Performance-based tests, include the number of items needed to adequately assess each TLO/ELO selected. • Ensure assessment items follow validation requirements in TP 350-70-5.
Document and establish the required level of test control.	• When the test/test item mirrors the task/TLO, and must always be performed in exactly the same way, then the test item requires no security measures. • If the test/test item has only a few possible variations, then the test/test item requires that all possible variations be protected. • If the test/test item has many possible variations, then the test/test item requires security measures that prevent individual students from knowing which variation of the test/test item they will receive.

Table 8-2
Assessment production guidelines, cont.

Steps	Action
Write CRT items that:	• Match the action, conditions, and standards of the TLO and ELO taught. • Ensure the student can accomplish the learning objectives under the stated conditions to the established standard. • Discriminate between performers and non-performers. • Measure actual on-the-job performance to the maximum extent possible; such as, maximize fidelity to actual performance. • Are highly interactive (for computer-based test items). • Collectively assess each and every TLO.
Check each test item to ensure:	• Content validity. • Accuracy, (such as, keyed [correct] alternative is doctrinally/technically correct and other alternatives/possible responses on a performance-based test are clearly incorrect). • Adherence to good item writing procedures. • Fairness (does not contain bias or confusion related to race, gender, or cultural differences).
Establish weighting factors where appropriate.	In many courses, individual assessments/tests are not weighted equally. Weight is based on importance of the task/learning.
Write a separate assessment lesson plan or include the assessment as a learning step activity in a lesson plan.	Write/update the ISAP.
Compile the assessment/test administration guide.	For performance or performance-based test construct an instructor/facilitator guide, check list, or rubric.
Conduct QC.	• Administer the assessment (for validation purposes) using the assessment administration guide (draft). • Validate the assessment (and the assessment administration guide) by ensuring it discriminates between performers and non-performers. • Revise the assessment tool as needed using the validity and reliability results. • Monitor the assessment results to identify problems that occur over time.
Note: See TED-T for a discussion of rubrics used for learner assessment. See TP 350-70-5 for additional information on assessment and test construction.	

c. Checklist for performance tests. Create a checklist when designing criterion-referenced performance tests to verify the student's competency to perform the learning objective(s) being tested. If possible, develop at least two scenarios/situations for each performance test to provide for two versions of the test.

d. When it is not feasible to test all the learners using actual equipment, a written test can be substituted.

(1) Use table 8-3 when designing criterion-referenced, written tests. This form helps ensure that an adequate quantity of test items are developed and administered to determine the competency of the student to perform the learning objective(s) being tested. For written tests, develop at least two versions of each test by determining the minimum number of items needed to adequately test each TLO/ELO and then constructing at least twice that many items.

Table 8-3
Test plan for a written test

Lesson/ TLO Number	ELO Number (optional)	Learning Step Activity	Quantity of Questions Needed for Coverage of ELO per Version	TOTAL Quantity of Questions for Step	Total Quantity of Items For Two Versions
0001	0001 A	A-1	2	4	
		A-2	1	2	
		A-4	1	2	
		A-5	3	6	
		A-7	3	6	20
	0001 B	B-1	5	10	
		B-3	3	6	16
0002	0001 A	A-2	3	6	
		A-4	2	4	
		A-5	2	4	
		A-6	2	4	18

(2) Passing score. In most military testing situations, the passing score for written tests should be set as high as can be tolerated by the command, considering resource constraints. This is because in most military situations, we train only critical tasks. Moreover, the impact of incorrectly identifying a student as a performer (a "false positive" error) far outweighs the impact (retraining/retesting and delay of human assets to units) of incorrectly identifying a student as a non-performer (a "false negative" error). The passing score for written tests are not usually set at 100 percent due to the possibility of poor test item construction influencing a student's response. Do not use written tests as the sole criteria to determine class standing.

e. For additional information on assessment (test) construction see TP 350-70-5, or *Designing Test Questions* on the University of Tennessee at Chattanooga website. The link is provided in the glossary and on the TED-T website.

8-5. Check on learning questions
A check-on-learning is an informal, required check to determine if students are learning. It can be as simple as asking one or two review questions or as complex as asking students to demonstrate skill performance.

a. When using check-on-learning questions, write questions that foster critical-thinking skills in students and support the active learning environment. Well-written questions:

(1) Require more than recall of a skill.

(2) Benefit students in terms of problem solving.

(3) Are open-ended; in many cases more than one acceptable answer may exist. In some instances, there will be a one-answer solution, but consider the possibility of varying approaches to attaining the one-solution or multi-solution type answers.

b. When developing check on learning questions, provide reference(s) for the answer or response(s). In addition to knowing the answer or response, one needs to know where to find the answer/response in the required reference.

(1) When developing questions that have a single correct answer, provide reference(s) for the correct answer.

(2) When developing questions that have multiple solutions, reference(s) for the various responses should be provided.

(3) Additionally, when developing check-on-learning questions for self-paced instruction, include references in the course materials or media, and provide remedial instruction for incorrect answers, or guidance on or good/better/best responses.

8-6. Test development or test revision decision making
Figure 8-1 provides a sequence of items to consider when deciding to create a new test or revise an existing test.

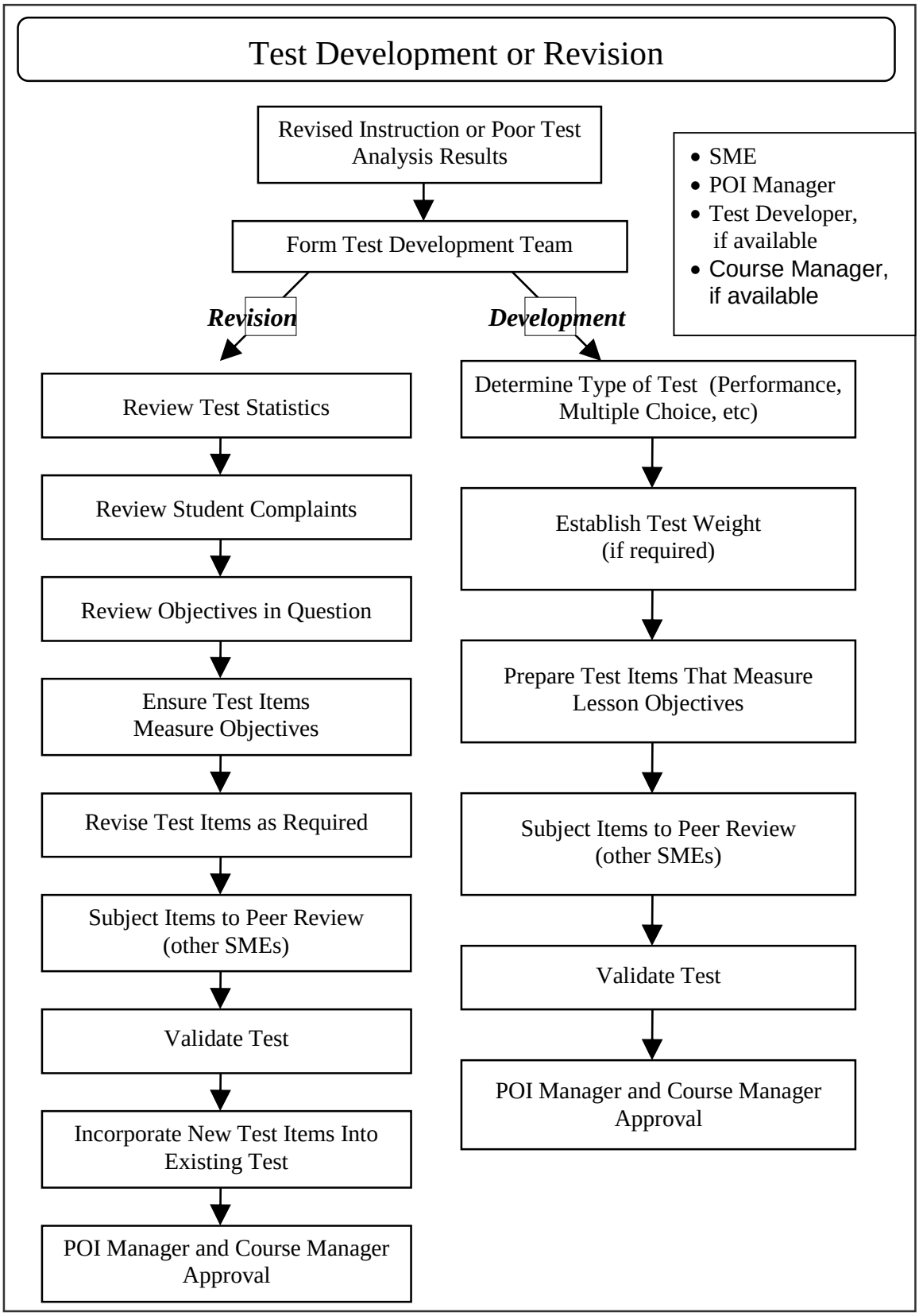

Figure 8-1. Test creation or revision

8-7. Test/test item analysis

a. Use the test item and test analysis to provide statistical data to help make viable decisions concerning student assessment. Tests analysis data should also be used to identify areas for lesson, course and instructor improvements. There are a variety of established procedures for analyzing CRTs and test items. The proponent school should identify and establish the specific procedures to be used. Refer to TED-T for examples.

(1) Terminology. There are a number of terms associated with test item/test analysis. For the purpose of this pamphlet, use the following definitions.

(a) Validity. Degree to which the test measures what it is intended to measure or the degree to which the test separates those who can perform from those who cannot perform.

(b) Content-related validity. The extent to which the test measures the objectives (tells if what is being tested is what was taught).

(c) Predictive validity. Degree to which the test predicts how well students will actually perform on the job (used to estimate future performance based on test performance).

(d) Reliability. Degree to which the test yields the same results consistently; both consistency across two administrations to the same students, and consistency across two forms of the same test.

(e) Usability. Tests that are easy to administer, score, and interpret.

(2) Validity/reliability relationship. A measure that gives inconsistent results (is not reliable) cannot give valid results. Any time a test item is examined for validity it must also be examined for reliability.

(3) Completion. "GO/NO GO" requirements or passing score for each TLO/ELO/learning step, the ISAP, and the Test Administration Guide constitutes completion of this step in the design and development process.

8-8. Assessing 21st Century Soldier Competencies

Students are assessed on their achievement of GLOs associated with the 21st Century Soldier Competencies. Training and education developers must create valid instruments (with clear, objective criteria and rubrics as needed) that evaluators can use to determine if a student has acquired or improved his/her achievement of the required competencies. Not all the GLOs will be assessed in every lesson or course.

8-9. Managing student assessments

a. Personnel responsible for training management must ensure all assessments are conducted in accordance with the assessment administration guide or ISAP. Managers must ensure that:

(1) Each course has an ISAP with which instructors/facilitators must comply.

(2) Student assessment should be as objective as possible. Multiple instructors/facilitators should use the same rubrics to assess performance. Combining and averaging multiple assessments minimizes subjectivity.

(3) Students perform established learning objectives, tasks or topics, and outcomes to prescribed standards.

b. Provide assessment materials directly to appropriate non-proponent center or school managers.

c. Establish procedures for analyzing assessment items.

d. Identify and correct assessment problems.

e. Ensure students are not failed using an invalid assessment.

f. Maintain a record of all assessment corrections until the next major course revision or complete revision and validation of the assessment.

8-10. Assessment control

a. Assessment control ensures each student has a fair and equal opportunity for successfully completing the assessment. Centers and schools may use the procedures outlined in AR 611-5 for security and control of assessment items as guidelines for developing their specific procedures consistent with the level of control required. Centers and schools must:

(1) Maintain security of all assessment items, assessments, assessment administration guides (if necessary), scoring and answer keys, and assessment results during transmittal, storage, retrieval, and administration consistent with the appropriate level of assessment control. Table 8-4 provides some guidance for determining controls for criterion-referenced written assessments.

Table 8-4
Test control guidelines

If the test/test item:	Then the test/test item requires:
Mirrors the task or TLO and must always be performed essentially in the same way (such as, Engage targets with your assigned weapon).	No security measures for adequate test control.
Has only a few possible answers.	Protect all possible answers from unauthorized disclosure.
Has multiple problems or scenarios that can be used.	Implementing control measures that prevent individual students from knowing the specific problem or scenario that each will receive. Example: Students must find and fix a troubleshooting problem inserted into an item of equipment. If the inserted problem is one of a set of possible problems, the students can receive a list of those problems, but cannot be told the problem each must find and fix.

(2) Follow assessment implementation procedures in the lesson plan, assessment administration guide, ISAP, or separate assessment control SOP.

(3) Restrict access to paper-based copies of test/test items, scoring and answer keys, and test results to those personnel demonstrating a valid need for the information.

(4) Immediately investigate and reduce the impact of test/test item compromises or suspected compromises.

b. The assessment administration guide and the ISAP contain specific directions for assessment administration and scoring. Use only proponent-approved assessment materials to prepare for and administer assessments. Maintain appropriate assessment security and control when conducting assessments. In addition to instructors/facilitators, support staff may also administer assessments.

c. For performance assessments, instructors/facilitators/support staff must:

(1) Positively verify each student's identity before administering an assessment.

(2) Provide written or verbal guidance to students, to describe what they are to do. The preferred method is a written document.

(3) Administer the assessment in accordance with the assessment administration guide.

d. For written assessments instructors/facilitators/support staff must:

(1) Positively verify each student's identity before administering an assessment.

(2) Provide students with the assessment administration guide or explain the process and procedures to a resident class. The level of detail in the guide or explanation may vary with the particular student body. For example, Army War College students do not require the detail that basic combat training Soldiers require.

(3) Administer the assessment in accordance with the assessment administration guide.

e. If any element of assessment administration is unclear or unmanageable, immediately contact the assessment proponent for additional guidance before administering the assessment.

f. Follow the ISAP as well as applicable local guidance and policy for remedial instruction.

Chapter 9
Job Aids, Graphic Training Aids (GTAs), and Training Circulars (TCs)

9-1. Job aids and graphic training aids

A job aid is a tool to assist performance and minimize the need for recall when performing tasks. It can be a checklist, procedural guide, quick-setup-guide, decision table, worksheet, technical manual, algorithm, or other device used as an aid in performing duty position tasks. A job aid supports performance of either the total task or a portion of the task, in the field as well as in the institution. Job aids and GTAs should be used whenever possible to reduce or eliminate learning product requirements, instructional time, and cost. However, developers must ensure the target audience has the skills and knowledge necessary to use the aid before making the final decision to replace any portion of formal instruction with an aid. In some cases limited formal instruction may be necessary to show how to use the aid. Only the proponent of the task(s) has authority to develop GTAs for that task. See TED-T for illustrative examples.

9-2. Job aid analysis

a. Determine the part of the job or task to be performed using the job aid. Use a job aid when:

(1) Performance is infrequent and it is unlikely someone will remember how to perform a specific task or set of steps, for example, instructions on a fire extinguisher.

(2) Performance is lengthy or complex and requires numerous steps, decisions, or consideration of many factors, such as a flowchart for troubleshooting engine problems.

(3) Poor performance has extremely negative consequences, such as safety risks or equipment losses.

(4) Improve performance through self-assessment and correction, such as processing personnel actions.

(5) A job aid can enable and facilitate learning completion or task performance.

b. Review data impacting job aid design. Review the target audience description, environment where the job aid will be used, and analysis data containing the content that will be in the job aid.

c. Determine the purpose for the job aid. Is the job aid informing, procedural, or for coaching or decision support? Informational job aids provide information for use during performance, such as an organizational chart or phone roster.

(1) Informational job aids form a ready reference for facts and concepts. They answer the questions "who," "what," "when," "where," and "how." Organize them by reference, function, sequential order, or subject matter structure to emphasize relationships and connections.

(2) Procedural job aids contain the actions and decisions required to complete the procedure, such as a list of steps for inspecting a piece of equipment. Worksheets and flowcharts are other examples. Procedural job aids answer, "How to execute a task," and "When to execute a task," and emphasize actions by using verbs. Procedural job aids present actions as steps in a sequence. They may also provide feedback by showing action paired with results (so users can judge their interim as well as final performance).

(3) Job aids can be used for coaching or decision support. Some complex job problems require unique considerations to make decisions. Job aids support these situations by providing ways to think about the problem when there is not a specific order or sequence of steps to solve the problem. For example, a job aid may provide guidelines for preparing for an operation. These job aids answer "why" and "how should I approach this?" They make suggestions rather than providing directions, emphasize thoughts, feelings, and meanings, model organization perspectives on work and life, and articulate quality standards.

d. Determine if an existing job aid can meet the intended purpose.

(1) Use or revise an existing job aid when possible to reduce costs.

(2) Review existing job aids and materials from other sources (for example, other services) that may fulfill the job aid requirement.

(3) If another job aid meets the need, then use it.

(4) If another job aid can be easily revised, then do so.

e. Determine the job aid format. The following seven formats are very common, but not all inclusive.

(1) Decision steps. Decision steps are listed as "if-then" statements that direct the performer to the next action based on the decision. Use this format when the steps must be followed in order.

(2) Work sheet. The worksheet format shows the steps and requires the performer to complete parts of the worksheet. Use this format when calculations are required or information must be documented as part of the performance and the steps are performed in sequence.

(3) Arrays. The array format allows the user to quickly view large bodies of information regarding who, what, or where in relation to the performance. An organization chart and a list of computer codes are examples of arrays. Use this format when the performance requires referencing data that can be organized for easy access.

(4) Flowchart/algorithms. Flowcharts (also called algorithms) can depict action and decision steps or a series of decision steps. Use this format to guide the performer through a complex decision making process that can be depicted with a series of "yes" or "no" questions.

(5) Checklist. Checklists help performers think about general guidelines and strategies without having to recall them from memory. Use this format if there are critical attributes about the performance, if performers are familiar with the content, or if order of performance is not critical. Checklists are also useful for evaluating performance or products against criteria.

(6) Decision table. Decision tables allow performers to enter at any point and help performers consider several associated conditions or variables. Limit the number of choices or options. Decision tables present "if-then" or "when-then" situations requiring performers to identify solutions.

(7) Electronic performance support system (EPSS). An EPSS is a computer software package that supplies immediate access to a database of integrated information, learning opportunities, and expert consultation. Performers control the scope and sequence. A wizard providing immediate and "just-in-time" instruction in a software program is one example.

Note: The formats described above are not the only formats for job aids. Use any format that proves effective. Developers may use multiple formats within a job aid.

f. Determine the job aid media. Consider the following questions:

(1) Does the job allow use of an electronic job aid?

(2) What media supports the required performance at the least cost?

(3) What media will be the easiest to maintain over the projected life of the job aid?

9-3. Designing job aids

Document the selected purpose(s), type(s), media, and content. Describe or include graphics and media required for development. Keeping job aids as simple as possible is usually best. Discussing the job aid format and media with performers before making a final decision is beneficial. Always keep the target audience in mind.

9-4. Developing job aids

a. Follow these guidelines during development:

(1) Write a simple title that communicates the job aid's purpose.

(2) Provide instructions for when and how to use the job aid.

(3) Minimize text and use language the target audience comprehends.

(4) Use clear, easy to comprehend graphics.

(5) Use action verbs for steps and "if-then" statements for decisions.

(6) Segment information into small, easy to use chunks.

(7) Provide examples when appropriate.

b. Include appropriate FD and classification restriction statements.

9-5. Validation of job aids

Steps for validating the job aid are:

a. Identify target audience members that are available for validation.

b. Schedule the time, facilities, materials, performers, observers, and other resources necessary to conduct the validation.

c. Ask performers to use the job aid to complete the work. Then gather feedback from the performers regarding the job aid. A checklist for gathering job aid feedback can be found in paragraph C-4 of this pamphlet.

d. Revise the job aid based on feedback from the validation. If major revisions are necessary, then repeat the validation to assess the revision.

e. Obtain job aid approval. Complete local staffing procedures to obtain approval of the job aid.

f. Reproduce and distribute the job aid. Submit for reproduction through local production channels.

g. Maintain the job aid. Review the job aid periodically with SMEs to determine if information needs to be updated. If the job aid needs revision, then collect data from SMEs regarding changes and repeat the applicable areas of the ADDIE process.

h. Refer to TP 350-70-10 for information on validation processes.

9-6. GTA design and development

Development and sharing of GTAs provides a means for reducing TD/training costs. The primary objective of a GTA is to enable trainers to conduct and sustain task-based training in lieu of using extensive printed material or an expensive piece of equipment. Secondly, GTAs may increase performance as on-the-job training or job aids. GTA usage ranges from quick reference memory aids to battalion simulation games. GTA developers are not restricted to a standardized format. The program encourages developers to use any degree of flexibility required to meet training requirements. GTAs incorporate a variety of instructional formats. They include (but are not limited to): printed/electronic texts, job aids, recognition cards, battlefield simulation games, instructional charts, and simple devices. GTA production is the same procedure as for job aids with additional requirements as listed in table 9-1.

Table 9-1
GTA design and development requirements

Actions	Requirements
Design the GTA	Design the GTA using the guidelines for designing a job aid.
Validate the GTA	• Choose a sample group of three to five representative performers (incumbents or previous incumbents). • Have the group individually perform the task with draft GTA. Teach the group how to use the GTA only when performers will receive formal instruction on how to use it. • Observe each trial user performing the task. Note whether furnished GTA was used, how it was used, and if any confusion was associated with use. • Administer questionnaire to users.
Prepare and submit GTA request to Combined Arms Center-Training (CAC-T), Army Training Support Center (ATSC)	• Prepare requirements data sheet. • Submit developmental GTAs and print specifications to Commander, CAC-T, ATSC on DA Form 260 (Request for Publishing).

Table 9-1
GTA design and development requirements, cont.

Actions	Requirements
Receive CAC-T, ATSC decision	CAC-T, ATSC approves or disapproves developmental GTAs (new and revised). Upon approval, CAC-T, ATSC provides a GTA number to be placed on final text/artwork in accordance with DA Pamphlet (DA Pam) 25-40.
Develop GTA	• Develop GTA text/artwork. • Submit GTA text/artwork to Commander, CAC-T, ATSC. • Receive approval or required revisions of artwork from CAC-T, ATSC. • Make corrections as required by CAC-T, ATSC. • Complete GTA development.
Submit completed GTA to CAC-T, ATSC	• Submit the completed GTA to CAC-T, ATSC for reproduction and distribution with the following: • CD-ROM with GTA converted to Adobe Acrobat Press Quality portable document format (PDF) with all fonts embedded. • Desktop publishing file in the native format. Include graphics and fonts. • A printer dummy. • A completed DA Form 260 (Request for Publishing) to include the following information: • Product specifications-paper type, size, how it should be folded, color. • Quantity to be printed. • Point of contact (POC) and phone number and e-mail for coordination. *Note:* See fielding of GTAs for further explanation.
Maintain GTA	• Review the GTA with SMEs periodically to determine if it needs updating or if it is obsolete. • Collect data from SMEs if the GTA needs revision. Notify Commander, CAC, ATSC of GTAs requiring revision with anticipated completion date, and then complete steps 5-8. • Notify Commander, CAC-T, ATSC of obsolete GTAs.

9-7. Quality control

To ensure quality GTA design and development, developers must ensure the GTA will accomplish what it was designed to accomplish, reduce, or eliminate formal instruction, provide safe operations, be immediately accessible to performers, and be usable and understandable.

9-8. Training circulars

A TC is a publication (paper or computer-based) that provides a means to distribute unit or individual Soldier training information that does not fit standard requirements for other established types of training publications. TCs are part of the Army-wide Doctrinal and Training Literature Program. This program is for management, prioritization, print/replication, and distribution of doctrinal and training literature, prescribed forms, and selected DA pamphlets and posters in a medium that supports the Total Army. Only the proponent of the task(s) has authority to produce TCs.

9-9. Analyzing and designing training circulars

TCs are a minimum essential requirement if a needs analysis identifies them as a training requirement. Use the chart in figure 9- 1 to determine if a TC is the appropriate type of publication for training material.

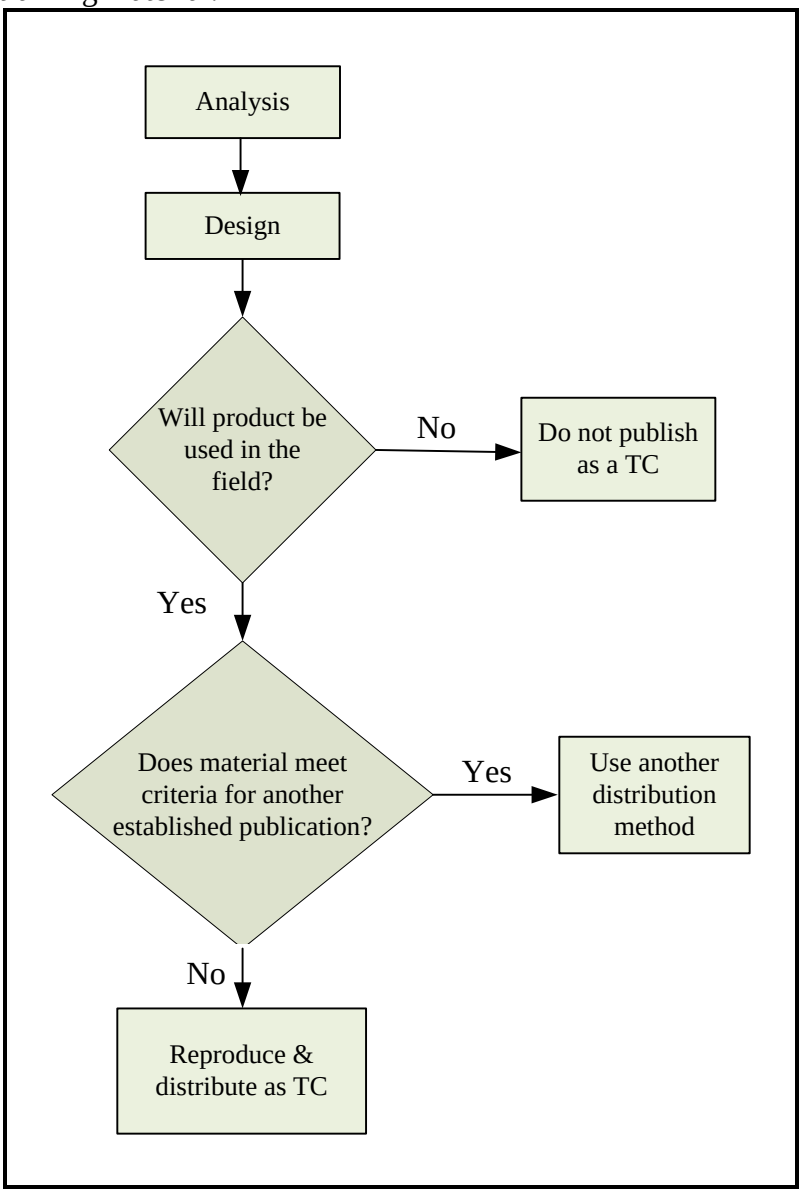

Figure 9-1. Training circular flowchart

9-10. Developing training circulars

Use format requirements based on the training need. TCs do not have a prescribed format, but it is important to use structured writing procedures and format whenever possible. TCs typically follow the same format structure as the TRADOC pamphlet.

9-11. Quality control of training circulars

To ensure QC, personnel involved in TC development must verify product usefulness, TC support of relevant analysis data, format, style, graphics effectiveness, technical content accuracy, and proper language and punctuation.

Chapter 10
Training Support Packages (TSP)

10-1. Introduction

A TSP is a complete, exportable package integrating training and education products and materials necessary to train/teach one or more lesson plan. A TSP is developed for an entire course, or for a group of related lesson plans, and can be used at sites other than the development location. Alternate sites could be an AA school, a training battalion in TASS, a unit, or via distributed learning. The contents of the TSP will vary depending on the number of lesson plans included. A TSP consists of a cover sheet, administrative instructions, supporting products, and complete lesson plans.

10-2. TSP numbering

Analysis during lesson development determines the need to produce a TSP. As a general rule, use the supported course number for the TSP number to positively identify the TSP.

10-3. Designing TSPs

As a norm, conduct the TSP design and development functions simultaneously. However, a TSP that contains multiple lessons must be designed first and then developed to ensure sequential, progressive training. This type of TSP pulls together the details of multiple lessons. Design and develop TSPs in essentially the same way as designing and developing courses and lessons.

10-4. Developing TSPs

a. TSP development starts with the receipt of the TSP design. TSP development primarily consists of packaging the material to be presented as a complete, comprehensive training package. Steps in TSP development appear in figure 10-1.

Training Support Package (TSP) Development Steps

Step 1. Acquire the task performance specifications for tasks to be trained.

Step 2. Develop/acquire the included training product(s).

Step 3. Add administrative details.

Step 4. Staff TSP with personnel and activities as appropriate for the type and content of TSP.

Step 5. Obtain appropriate command authority approval.

Step 6. Arrange for reproduction and distribution.

Figure 10-1. Steps in training support package development

b. The instructor/facilitator and student guides are supporting products in a TSP.

(1) The instructor/facilitator guide provides additional information that is necessary to conduct instruction. Create guides for both resident and DL instruction as required. Instructor/facilitator guides include, but are not limited to, the following sections:

(a) Course schedule.

(b) PE sheets with student instructions and PE sheet answer keys (as necessary).

(c) Slide presentations (as appropriate).

(d) Tests and test solutions.

(e) Instructor/facilitator notes necessary for execution.

(f) Copies of student guides or handouts.

(g) Instructor/facilitator tips for online courses as necessary (for example, announcement templates or discussion board topics).

(2) The student guide provides additional information to the student necessary to achieve the objectives. Student guides include, but are not limited to, the following:

(a) Course schedule.

(b) Instructor/facilitator contact information.

(c) ISAP and assessments.

(d) Student code of conduct.

(e) Slide presentations (as appropriate).

(f) PE sheets and instructions (as necessary).

(g) Student handouts including copies of articles and supplemental reading materials.

(h) Special instructions (for example, discussion board assignments if DL course).

(i) References list.

(j) Training aids.

(k) Simulation and gaming references and information.

c. The TDC system automatically consolidates lesson plan information into four main supporting material portions when generating a TSP. These include the viewgraph master, tests and test solutions, practical exercises and solutions, and student handouts. TDC pulls this information from the linked lesson plan(s). To create a TSP for a complete module, link all lesson plans for that module to the TSP.

10-5. Quality control
For a quality TSP, each involved individual must ensure the TSP meets format and component requirements; all TSP components meet requirements identified in respective chapters of this pamphlet; and the training provided by the TSP is feasible, cost effective, valid, sequential, and progressive. The TSP must be validated and approved prior to reproduction and distribution. Paragraph B-5 contains a TSP QC checklist.

Chapter 11
Managing Training and Education

11-1. Introduction

a. The purpose of this chapter is to present management guidance for the production of institutional domain training and education products. This chapter supports and amplifies the regulatory guidance found in TR 350-70.

b. CAC, in coordination with DCS, G-3/5/7, serves as the TRADOC functional proponent lead for Army training and education development. The CAC develops, supports, recommends priorities and integrates Army training and education across all cohorts in support of Force Generation in order to dominate in Unified Land Operations in a Unified Action environment. This includes developing training and education policy, guidance, and regulations; standardization and QC of products; and development of functional requirements for automation.

c. CAC-T, Training Management Directorate (TMD) executes the role of the CAC responsible agent for Army training and education. CAC-T, TMD:

(1) Serves as the Army's collective task, individual task, and educational products manager.

(2) Develops unit training management strategy and integrates associated doctrine, tactics, techniques, and procedures into training and education products.

(3) Coordinates with institutions and proponents to develop policy and guidance.

(4) Establishes review boards in coordination with institutions and proponents. Review boards develop, recommend, revise, approve, and achieve consensus on training and education products that are used across multiple units, proponents, or CoEs. Review boards establish and maintain standardized learning products that support commanders, instructor/facilitators, and trainers in planning, preparing, executing, assessing, and evaluating training. The end-state of all review boards is to enable TRADOC to provide current and relevant training and education products for Soldiers in the operating force, resulting in fully prepared Soldiers for decisive action in unified land operations. Common components and actions of all review boards include:

(a) Members of the review boards nominate task issues for consideration prior to each review board.

(b) TMD coordinates with review board members to clarify submissions or to reach early resolution on issues.

(c) Review boards forward recommendations to the appropriate approval authority. After final approval, immediately update the approved automated systems to reflect updates or revisions to the learning products.

(d) Review boards address training and education products that must be used, as approved by the responsible proponent.

(e) Review boards convene in a variety of venues based on membership, purpose, end-state, and resources. Document management system collaboration sites, video teleconference, and face-to-face venues are all viable options for conducting the business of a review board.

(f) TRADOC Pamphlet 350-70-1 contains more information about review boards.

11-2. Proponent guidance for product management

a. Proponent training/education managers are responsible for ensuring that the necessary analyses are conducted. Their responsibility is to ensure that they obtain the data needed for further analysis and learning products development. In most cases, developers, SMEs, or analysts conduct the analyses or at least provide assistance. Periodic critical task and site selection boards play a vital role in this process.

b. A proponent can only revise or develop institutional products for which they are the designated functional proponent. If another proponent requests a change be made to an institutional product, the responsible proponent may elect to make the change or may accept the efforts of the requesting proponent to make the change. Responsible proponents are encouraged to use the efforts of other proponents to achieve consensual improvement of their institutional products. A lesson plan developed or revised by another proponent must be provided to the responsible proponent, given a responsible proponent ID number, and approved by the responsible proponent before being incorporated into another proponent's courses.

c. AR 5-22 and TP 350-70-16 designate proponents and responsibilities. Figure 11-1 provides a graphic display of the product management process.

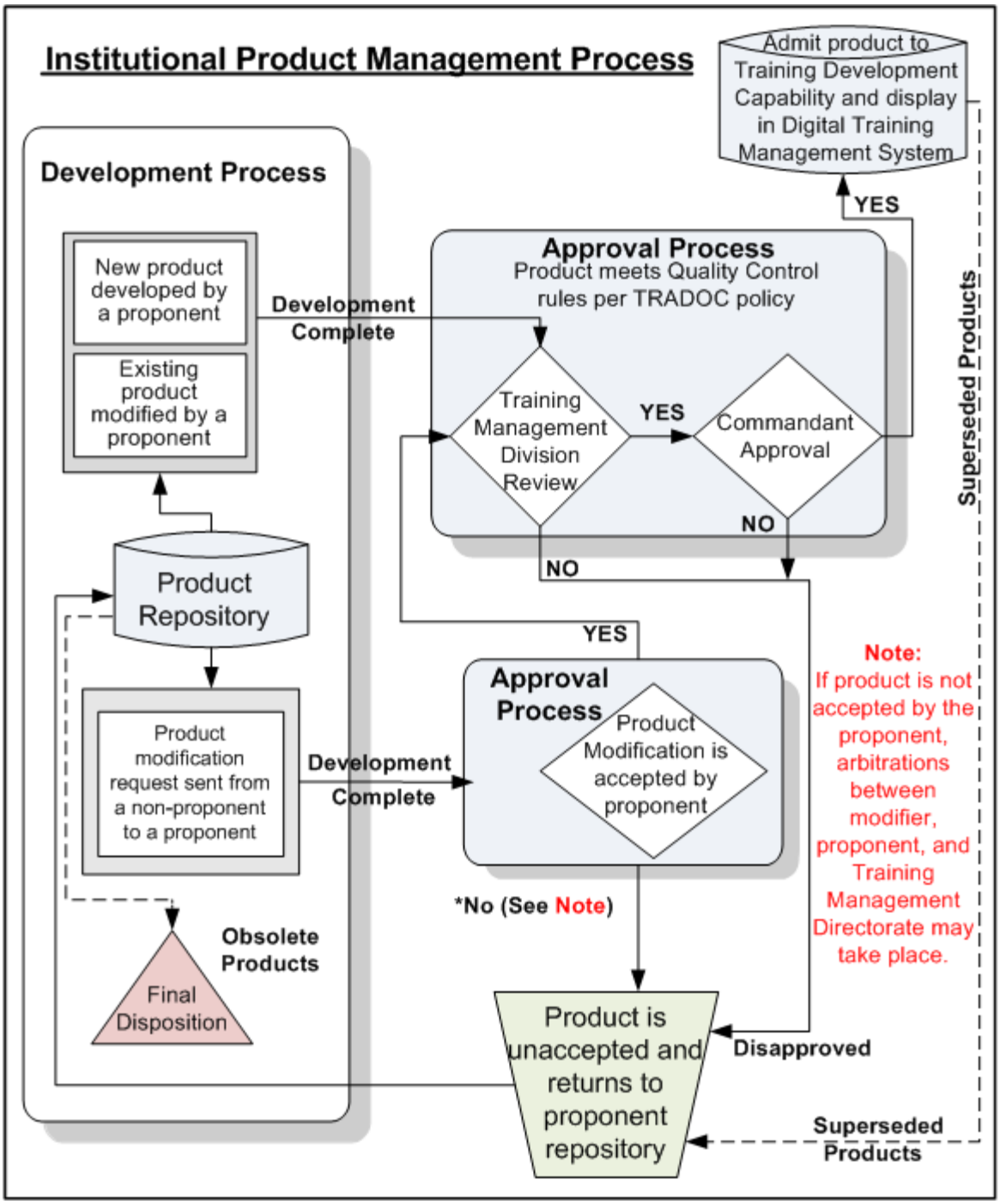

Figure 11-1. Institutional product management process

11-3. Automation of training and education products

a. Proponents must use the CAC-approved automated development system (currently TDC) to develop and/or deliver all training and education products identified in this pamphlet. Table 11-1 provides an overview of product numbering and title business rules, and shows which products do not require numbering or titles.

Table 11-1
Product format overview

Product	Format	Product Numbering Rules
Course	See TOMA Memorandum dtd 15 Mar 2013	Course numbers are related to DoD Officer and Enlisted occupational codes found in DA Pam 611-21.
Phase	1, 2, 3, 4	Single digit number.
CAD	None	Falls under course number.
POI	None	Falls under course number.
Lesson Plan	PPPP-NNNNNNNN	Proponent code and up to eight alpha-numeric characters.
TLO	None	Falls under lesson plan number. Only one TLO per task-based lesson plan.
ELO	A, B, C, D	Single letter.
Individual Task	PPPP-xxx-NNNN	Include proponent code, task type, unique number assigned by proponent. Alpha-numeric.

Product	Product Title Examples	Product Title Rules
Course	See TOMA Memorandum dtd 15 Mar 2013	Identifies the target audience (often ends with the word "course"). Cannot exceed 45 characters.
Phase	None	Each phase has a CAD and a POI, but they do not have titles.
CAD	None	
POI	None	
Lesson Plan	Thinking processes	Main subject or topic only.
TLO	Apply **thinking processes** to resolve a problem	Action verb, subject, and a clarifier if needed. (Lesson plan title and TLO subject will often match).
ELO	State the general principles and models of problem solving	Is a subset of the TLO. Includes action verb, subject, and a clarifier if needed.
Individual Task	Engage targets with an M-16 series rifle	Includes action verb, subject, and a clarifier if needed.

b. Proponents are responsible for entering or uploading design data, such as CAD and POI in the CAC-approved automated system(s). The proponent systems administrator controls access to the information in the database(s) and provides the appropriate read and write permissions to proponent users.

c. For those documents not in the CAC-approved automated development system, such as the ISAP, the local training and education development authority must have an SOP for audit trail and distribution purposes.

11-4. Quality control of training and education products

a. Training proponents will route new institutional products to TMD during the staffing process prior to final approval by the proponent approval authority.

b. CAC-T, TMD will provide quality control of revised institutional products by reviewing a sample percentage of these products with an updated change history to ensure standardization and completeness in the CAC-approved automated development system.

c. CAC-T, TMD will provide recommended changes and required corrections, as necessary, to the responsible proponent.

d. The training proponent will adjudicate recommended changes, complete required corrections in the CAC-approved automated development system, and notify CAC-T, TMD of the results.

e. CAC-T, TMD coordinates with TRADOC G-3/5/7, Training Integration Directorate, TRADOC Capability Manager (TCM)-The Army Distributed Learning Program (TADLP), institutional development proponents, and ATSC for the requirements of the CAC-approved automated development system. This system must provide all proponents with one institutional development data source. It must also incorporate business practices and capability improvements that enhance the efficient and standardized development of institutional products.

f. CAC-T, TMD provides QC of all proponent-developed institutional products by ensuring enforcement of policy, proponency, and the development of standardized Army learning.

11-5. Distribution of learning products

Consider the learning product complete when approved by the appropriate proponent authority. Make the approved learning product available to the appropriate users and organizations using various distribution options. See table 11-2 for some examples of distribution options.

Table 11-2
Learning product distribution options

Option	Considerations
CAC-approved automated development system	Distributing data electronically is the most efficient way to share proponent-approved data with the organization and unapproved data internal to the organization. Proponents control access rights.
Central Army Registry (CAR)	Proponents link or load all approved and validated products to CAR. Proponents grant access to their material.
DAVIS/DITIS	Proponents link or load all approved and validated products to DAVIS/DITIS.
Manual distribution	Manual distribution is the most labor-intensive. Use only when necessary.
Other Options	ALMS, E-LLC,

11-6. Management of common core training and education
Common core training and education is the combination of common military tasks, common leader tasks, and directed or mandated tasks for specific courses, grade/skill levels, or organizational levels regardless of branch or career management field or program. Agencies involved in the management of this include the School of Advanced Leadership and Tactics, the Command and General Staff College, the Warrant Officer Career College, the Institute of NCO Professional Development at TRADOC, and the IMT CoE.

11-7. Course management

a. Course management involves identifying and managing instructional challenges. These challenges may include, but are not limited to, working with instructors, handling communications to and from students, organizing and managing student groups, maintaining attendance, recording grades, returning student work, using media technologies, and organizing special events (e.g., field trips, guest speakers). The Army's and/or institution's course management system can help store, organize, and communicate the information for a course. General course management guidance is to plan ahead, request what you need (e.g., materials, equipment, rooms) well in advance, keep careful records, observe all federal and Army regulations, communicate clearly and often, and anticipate potential problems.

b. Requirements for proponent course management include:

(1) Review courses to ensure currency. A course is considered obsolete and in need of major revisions due to task performance changes that threaten survivability or mission accomplishment, that result in a major environmental or safety impact, or that can be more effectively or efficiently accomplished by changes in instructional systems or strategies.

(2) Prioritize proponent course redesign/revisions, considering:

(a) Readiness (i.e., MOSQ) and mobilization requirements.

(b) Force structure changes.

(c) MOS changes/consolidations.

(d) Equipment/doctrine changes and technological upgrades.

(e) Return on investment, including but not limited to: training load, density of proponent MOS within a TASS region, adaptability of ARNG/USAR time constraints, TD resources, improvement in instructional systems or strategies.

(3) Coordinate with the RC community. This is critical to ensure successful course production. Proponent schools must coordinate through their Deputy Assistant Commandant (ARNG or USAR) or TFIO for:

(a) SME assistance with job revisions, task analyses, course design and development, and courseware validation.

(b) Concurrence with each proposed course structure (map), supporting narrative, and POI.

(4) Manage course analysis, design, and development to ensure timely implementation.

(5) Coordinate threat manager assistance to review training products, and validate for accuracy of threat content.

11-8. Course quality assurance and workload management

Management of the evaluation and QA program involves coordination with TRADOC QAO and recording of resource requirements into DA approved workload database(s). QAO provides proponent schools and key leaders feedback and guidance to develop and implement quality doctrine, training and education to ensure Army readiness. DA approved workload database(s) are the models used to manage doctrine and Army learning product development and evaluation requirements. Training and education management plans are updated as necessary to ensure proponents are producing efficient and effective learning products. See AR 350-1 and the TRADOC QAO website for additional information.

11-9. Implementation management

a. Implementation is the fourth phase of the ADDIE process, and consists of the conduct and delivery of instruction. It applies to the three domains of Army learning: operational, institutional, and self-development.

b. Implementation actions required for individual learning products are:

(1) Prepare instructor/facilitator material.

(2) Rehearse instructor/facilitator.

(3) Conduct final coordination checks.

(4) Prepare a formative evaluation report.

(5) Provide instructor/facilitator feedback.

(6) Complete student assessments.

Note: Other TRADOC pamphlets provide additional information on implementing DL and unit training. Pamphlets are found on the TRADOC publications website.

c. Core requirements for centers, schools, and other entities implementing training and/or education are:

(1) Comply with applicable laws and regulations.

(2) Comply with safety and environmental protection rules, regulations, laws, and course requirements.

(3) Ensure proper maintenance of required facilities, material, equipment, and systems.

(4) Obtain required reference materials and ensure instruction includes current and unpublished, approved doctrine.

(5) Implement based on approved analysis, design, and development outputs.

(6) Continuously collect evaluation data per the evaluation plan developed in previous phases and provide appropriate feedback to the proponent.

(7) Maintain training and education records.

d. The exact resource requirements and level of effort needed to prepare the learning environment for implementation will vary. Instruction may be face-to-face, DL, instructor-led, self-paced, or any combination of these. Figure 11-2 depicts general implementation preparation and planning activities.

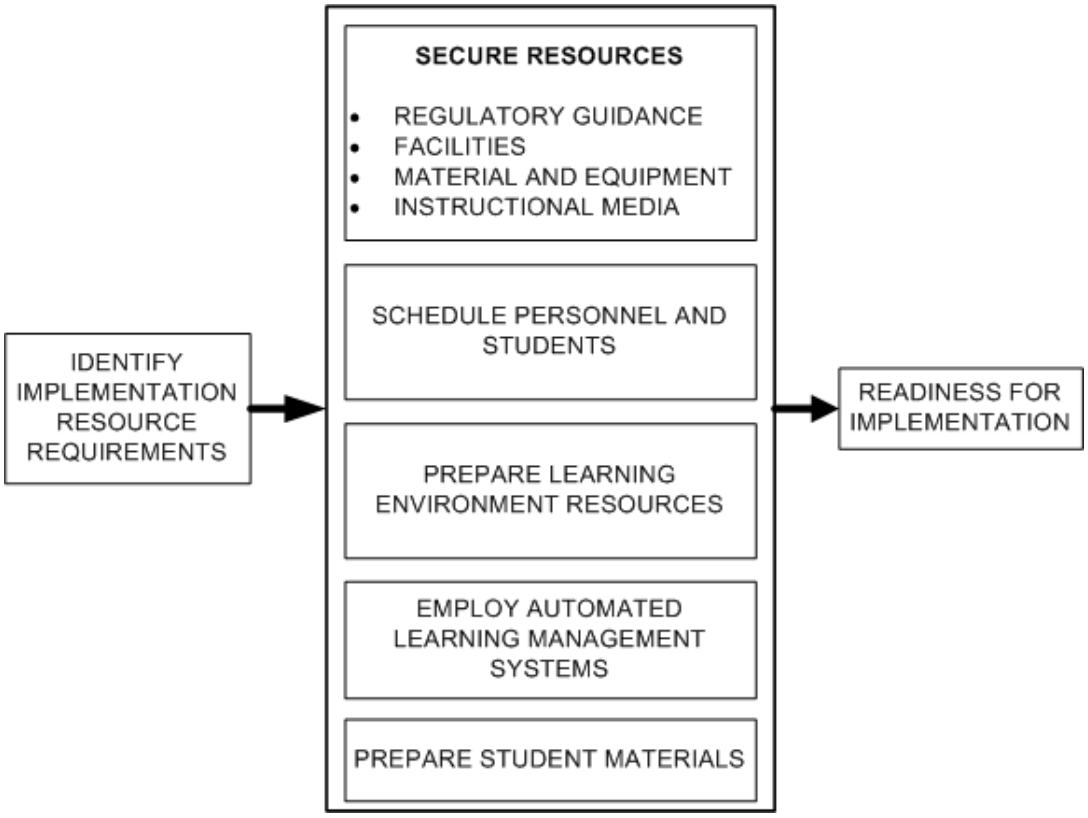

Figure 11-2. Implementation planning and preparation activities

e. Support personnel requirements for implementation vary depending on the nature of the instruction. Course documents specify personnel requirements. Table 11-3 lists the personnel requirements that commonly support implementation. The table also provides associated actions and considerations for each requirement.

Table 11-3
Implementation personnel requirements

Personnel requirements	Instructor/facilitator actions and considerations
Support personnel may include: • Assistant instructors/facilitators • Guest instructors/facilitators • Facilities managers • Technology or technical support specialists • Administrative support staff • Range and safety officers • Transportation providers	• Identify personnel requirements listed or implied in the course materials, learning products, and documents. • Confirm that individuals have been assigned and scheduled to participate in accordance with requirements in the course materials and learning products. • Verify that all assigned support personnel have met any training, qualification, and certification requirements listed in the course materials and learning products. • Contact each individual to ensure roles and responsibilities are clear in terms of course implementation requirements.

f. The Army Learning Content Management Capability has identified three approved delivery platforms. Consult managers and local directives for specific guidance on the use of an approved learning management system (LMS). Consult with the TCM-TADLP for any required DL LMS requirements. An LMS provides a central location for:

(1) Registering and enrolling students.

(2) Monitoring assessments and student progress.

(3) Distributing, delivering, storing, and presenting learning products.

(4) Maintaining training and education records.

(5) Collecting and storing feedback and evaluations.

(6) Maintaining a database of learning products and resources.

11-10. Instructor/facilitator and material preparation for implementation

a. Instructors/facilitators:

(1) Operate equipment, job aids, training aids, instructional media and equipment, and automated training support systems. To insure technical competency/preparedness:

(a) Review all course materials and learning products (for example, lesson plans, student handouts, and references).

(b) Practice performing the actions/objectives or outcomes to standard as necessary.

(c) Rehearse and practice teaching with the various media selected for each learning step activity.

(d) Practice using any operational equipment, test equipment, and tools.

(e) Practice inserting any problems or faults required by learning step activities to verify possible solution sets.

(f) When used, ensure OPFOR tasks and role player requirements are rehearsed to ensure OE conditions promote the accomplishment of each learning step and activity. The threat manager can assist in these preparations.

(2) Respond to unique student needs.

(3) Perform the instructional activities and student performance assessments described in the TSP or lesson plan.

(4) Deliver the instruction to develop agile, adaptive, thinking Soldiers and DA Civilians who can perform and solve problems in various and constantly changing contemporary OEs.

(5) Conduct and participate in internal evaluation of the implementation process.

b. Using the information presented in the CMP and TSPs, instructors/facilitators should:

(1) Reproduce and prepare handouts, job aids, training aids, and printed exercises.

(2) Reproduce the ISAP for distribution to students, or post the ISAP in the classroom.

(3) Reproduce or make available all supporting media products for distribution to students. Package and label media products as applicable.

(4) Ensure availability of resources such as classroom, computers, projection equipment, screens, audio equipment, and possibly web-based software such as Blackboard.

(5) Inventory requirement classroom supplies such as paper, pencils, flip charts, or markers.

c. Course preparation includes final coordination checks. Conduct final coordination checks prior to scheduled instruction (for AA generally one week prior is sufficient, however, check with RC to ensure timeframe meets their standard for coordination checks). Verify that AA and RC Soldiers are taught to the same standard using the same or equivalent equipment, facilities, and TADSS. Involve the RC throughout the implementation process to ensure course requirements meet the needs of all Soldiers. Table 11-4 lists the resource requirements that commonly support implementation. The table also provides actions and considerations for each requirement. Instructors/facilitators should consult course documents for any unique resource requirements, and add them to the final coordination checklist.

Table 11-4
Course preparation and coordination checklist

Check	Actions and considerations
Regulatory guidance, policy, directives, and local SOPs	• Review applicable HQDA and HQ TRADOC regulations and local SOP regarding: ▪ Training implementation. ▪ Facilities, site scheduling, and use. ▪ Automated training support systems. ▪ Environmental requirements and procedures. ▪ Safety issues and requirements. ▪ Security issues for the instruction. • Review copyright restrictions.

Table 11-4
Course preparation and coordination checklist, cont.

Check	Actions and considerations
Class roster and scheduling	• Confirm date and number of students on class roster against minimum and maximum class size. • Confirm that class schedule is completed. • Confirm scheduling of external speakers.
Facilities	• Confirm facilities with required learning products cited in course materials are scheduled. These facilities include but are not limited to: ▪ Classrooms. ▪ Hangars. ▪ Ranges. ▪ Digital training facilities. • Identify personnel responsible for maintaining facilities and sites.
Materiel, tools, and equipment	• Ensure that all materiel requirements cited in the course materials and learning products are present and operable at the instruction site. These requirements include but are not limited to: ▪ Tactical equipment. ▪ Test equipment. ▪ Tools. ▪ Spare components and parts as required. ▪ Safety and environmental protection equipment. • Identify personnel responsible for maintaining and servicing equipment. • Request assistance in operating equipment if required. • Ensure applicable technical manuals are available. • Complete property book entries in accordance with regulatory guidance.
Training aids	• Ensure all specified training and education aids are present and operable at required sites. Aids may include but are not limited to: ▪ Mock-ups. ▪ TADSS. ▪ GTAs and courseware. • Identify personnel responsible for maintaining training aids. • Ensure job aids or operating manuals are available. • Request assistance in preparing and/or operating training aids, if required.
Instructional media, supplies, and materials	• Ensure all instructional media, supplies, and materials stated and implied in the course materials and learning products are present and operable at the instruction site. Media include: ▪ Computers. ▪ Projection equipment. ▪ Screens. ▪ Video recorders. ▪ Easels, butcher paper, and markers. ▪ Televisions and DVD-ROMs. ▪ Any media used for DL purposes and/or newly developed media. • Place all equipment where all students can see and hear it.
Support personnel	• OPFOR and/or role players. • Assistant instructors.

11-11. Evaluation during implementation

a. Evaluation is a continuous process used by all organizations to maintain and improve the quality of their programs. Evaluation during the implementation phase of ADDIE includes student assessment to measure achievement of Army learning standards and outcomes, as well as formative evaluations to ensure continuous improvement. Managers must ensure formative evaluation occurs during the implementation phase as specified in the program evaluation plan. A formative evaluation report (audit trail) is maintained during implementation. The report includes a formative evaluation of each instance of learning product implementation, and the collection of critiques, feedback, and AARs for each instance. Critiques, feedback, and AARs collected after the completion of the implementation phase will contribute to data used for summative evaluation during the evaluation phase.

b. Managers must create and update an implementation formative evaluation report. The formative evaluation report acts as an audit trail, and includes the documentation to support the decisions made and the actions taken during the implementation process.

c. Minimum essential requirements for the formative evaluation report are:

(1) Staff, faculty, and cadre training records.

(2) Soldier and DA Civilian training records.

(3) Periodic course reviews.

(4) Documentation of instruction modifications and rationale.

(5) Documentation of any discrepancies, defects, or omissions in implementation that require correction.

(6) Documentation of environmental, security, and safety considerations.

(7) Format the formative evaluation report in accordance with DI-SESS-81524B (Training Evaluation Document) found on the Defense Logistics Agency's ASSIST website. This form provides the Department of Defense standards to evaluate training that is being developed. The link to this site is listed in the "Key Links" section of the glossary.

d. AARs and reflective learning practices are structured activities in which instructors/facilitators and students provide data on objectives, activities, and outcomes (See ADRP 7-0 for discussion of AARs in general). AARs and reflective learning practices capture student perspectives. Instructors/facilitators may guide discussion to bring out important points. Conduct AARs immediately after completion of a learning event. Conducting too many AARs is better than conducting too few. Times that might be appropriate for an AAR include the end of each day of instruction, the end of a course, or any

time students appear confused or make frequent errors during performance. Table 11-5 provides an AAR format, elements, and actions.

Table 11-5
After-action review format

Element	Action
Introduction and rules	• Introduce the purpose of the AAR. • Outline the procedures for the conduct of the AAR. • Ensure participants comprehend the discussion is nonjudgmental.
Review of training objective or educational goal	• Clearly identify the task or topic that is being reviewed. • State the elements of the objective or goal.
Review of what was supposed to happen	• Ensure all participants know exactly what the standard is, so success can be accurately measured. • Ask students how they were expected to get to the objective. • Focus students on the question: "What was supposed to happen?" • Restate learning steps, if appropriate. • Refer to any evaluation checklists that were used.
Summary of what actually happened	• Solicit comments from students. • Focus students on the question: "What actually happened?" • Capture strengths and weakness of the learning activity. • Ask participants to summarize points. • Reinforce what went well and fill in any gaps. • If used, solicit comments from OPFOR and role players as to their mission, observations on what they felt the student(s) did well, and what to improve on.
Discussion of why the actual outcome happened and how to improve it	• Facilitate feedback from all participants. • Solicit suggestions on how to improve performance. • Guide discussion to keep it constructive and impersonal.
Summary	• Summarize. • Make positive closing comments.

e. Pre-assessments, post-assessments, end of course critiques, and other feedback are primarily data collected through surveys and critiques. Because end-of-course feedback seldom allows instructors/facilitators to obtain feedback in time to incorporate changes to actual needs, the instructor/facilitator should actively seek feedback throughout course delivery.

(1) Individual feedback from course participants is a valuable tool for identifying strengths and weaknesses in programs and courses. Most organizations have a standardized document for collecting this information from students. Local policy and procedures must specify the data collection instruments.

(2) Throughout course delivery, collect feedback from students on instruction, delivery, and instructor/facilitator performance. Methods to obtain feedback include but are not limited to:

(a) Listening to students. Instructors/facilitators may gather information through many avenues such as informal conversations and group discussions.

(b) Analyzing student surveys and critiques. This method is primarily an information collection tool.

(c) Observing student performance and behaviors. This normally occurs as students perform "hands-on" performance assessments.

(d) Reviewing student-generated materials.

(e) Getting feedback from others, including peers.

(3) Responses to student feedback include:

(a) Summarizing what the students liked about the instruction.

(b) Listing the main suggestions made for improvement.

(c) Outlining what changes are being made or planned for implementation.

(d) Indicating what changes can and cannot be made and why.

11-12. Implementation closeout management

a. Closeout management describes the activities instructors/facilitators perform to ensure successful implementation completion. The specifics of closeout activities may vary depending on the unique requirements of the program or course, but all must address internal course evaluation; administrative requirements; and personnel, facilities, and equipment management. The intended outcome of closeout activities is data collection about the implementation procedures associated with the course. It is important to report recommendations back to the proponent/component for corrections and updates to lesson materials. Closeout activities produce the following:

(1) Internal evaluations, including end-of-course critiques and end-of-course AARs, and documentation, per requirements, completed and submitted to managers.

(2) All student record entries completed and data entered into the approved LMS in accordance with guidance. Maintain student records in accordance with Army and TRADOC policy. TR 350-18 provides regulatory guidance on maintaining student academic records. These records include evaluations, counseling records, and assessment scores (document scores only, do not file copies of the assessment or exam answer sheets in student records).

(3) All facilities and equipment activities completed.

(a) Facilities returned to their original state and released to the local organization.

(b) Equipment, training aids, and instructional equipment returned in safe and serviceable condition.

(c) Ensure performance of any required preventive maintenance checks and services on equipment or facilities as appropriate.

(d) Inform appropriate individuals of any identified safety issues or required maintenance or repairs.

(e) Maintain copies of any hand receipts for equipment, training aids, and other items as appropriate.

(4) All course materials and learning products filed as required by the local organization.

(5) All personnel management activities completed and support personnel released to their parent organization or duty station.

(6) All administrative documentation completed, submitted, and filed as required by the Army, TRADOC, and the local organization. Timely and accurate completion of Army learning documentation is a critical requirement of course closeout activity. Administrative requirements include, but are not limited to, the following:

(a) Course completion documents, including any required by the local organization.

(b) Course folder.

(c) Certificates of completion.

(d) Entries into the LMS or other automated systems as required.

(e) Awards, certificates of appreciation, and similar documents for cadre, support personnel, and other organizations that support delivery of instruction.

(f) Summary of AAR documentation.

(g) Instructor/facilitator feedback on course materials, learning products, and course implementation.

b. Closeout also includes QC procedures.

(1) Ensure the formative evaluation report is completed.

(2) Review and make required adjustments to resources.

(3) Conduct lessons learned sessions with staff, faculty, and supporting staff.

(4) Document lessons learned officially.

(5) Distribute lessons learned to all key staff members.

(6) Review the POI, including the CAD and ITP as necessary, and identify any deficiencies.

(7) Develop contingency plans for overall operations as required.

(8) Update milestone schedules as required.

(9) Write any required implementation reports to include but not be limited to: successful risk assessment and mitigation techniques, techniques to improve student performance, financial data, student performance data, and instructor/facilitator performance data.

(10) Review contracts supporting implementation and make adjustments if feasible.

11-13. Accreditation

a. Accreditation is the formal authority to conduct (or continue to conduct) training and education. Formal accreditation certifies that an institution's administration, operations, and logistical support are adequate to support training to course standards. It certifies that all training and education follows approved academic processes and methods.

b. Army training and education accreditation is the Army accreditation program that learners in Army schools are being trained and educated on the right tasks to the appropriate standards, from qualified/certified instructors/facilitators and mentors, with all the necessary equipment, supplies, support personnel and facilities, and in an atmosphere conducive to learning.

c. TRADOC is the Army’s executive agent for accrediting Army training and education institutions and programs. The TRADOC QAO manages, directs, and schedules the accreditation of Army training and education institutions to ensure programs are current

and relevant, adequately supported, prepares Soldiers and leaders for the future, and conforms to Army and TRADOC regulations and senior leader guidance. For details on the Army's Quality Assurance Program accreditation functions as well as other accrediting bodies, see AR 350-1 and the TRADOC QAO website for policy and implementing guidance.

d. Army educational institutions that offer degree programs to their students are consistent with the recommendations of the U.S. Department of Education and accredited by regional accrediting bodies. TP 350-70-7 provides more information on the accreditation process.

Appendix A
References

Section I
Required publications

Official Department of the Army (DA) publications and forms to include Army regulations (ARs), ADPs, field manuals (FMs), and STPs are available on the Army publications website; TRADOC administrative publications to include TRADOC Regulations (TRs) and TRADOC Pamphlets (TPs) are available on the TRADOC publications website.

AR 25-1
Army Knowledge Management and Information Technology

AR 25-2
Information Assurance

AR 25-30
The Army Publishing Program

AR 25-55
The Department of the Army Freedom of Information Act Program

AR 27-60
Intellectual Property

AR 200-1
Environmental Protection and Enhancement

AR 350-1
Army Training and Leader Development

AR 350-38
Training Device Policies and Management

AR 351-9
Inter-Service Training

AR 380-5
Department of the Army Information Security Program

AR 380-10
Foreign Disclosure and Contacts with Foreign Representatives

FM 5-19
Composite Risk Management

STP 21-1-SMCT
Soldier's Manual of Common Tasks, Warrior Skills, Level 1

STP 21-24-SMCT
Soldier's Manual of Common Tasks, Warrior Leader, Skill Levels 2, 3, and 4

TP 350-70-7
Army Educational Processes

TP 350-70-9
Budgeting and Resourcing

TP 525-8-2
The U.S. Army Learning Concept for 2015

TR 10-5-4
United States Army Combined Arms Center

TR 25-30
Preparation, Production, and Processing of Army-wide Doctrinal and Training Literature (ADTL)

TR 350-10
Institutional Leader Training and Education

TR 350-70
Army Learning Policy and Systems

TR 385-2
U.S. Army Training and Doctrine Command Safety Program

Section II
Related publications
Official Department of the Army (DA) publications and forms to include Army regulations (ARs), ADPs, ADRPs, field manuals (FMs), Army techniques publications (ATPs) and STPs are available on the Army publications website; TRADOC administrative publications to include TPs are available on the TRADOC publications website.

10 United States Code (USC), Section 663

AR 5-22
The Army Force Modernization Proponent System

AR 611-series
Personnel Selection and Classification

ADRP 7-0
Training Units and Developing Leaders

Bloom, B.S. (Ed). (1984). ***Taxonomy of educational objectives handbook I: Cognitive domain***. White Plains, NY: Longman

CJCSI 1800.01D
Officer Professional Military Education Policy (OPMEP)

DA Pam 25-40
Army Publishing: Action Officers Guide

DA Pam 611-21
Military Occupational Classification and Structure

Doran, G.T. (1981). There's a SMART way to write management's goals and objectives. ***Management Review***, Vol 70, Issue 11 (AMA FORUM), pp. 35-36

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TP 350-70-1
Training Development in Support of the Operational Domain

TP 350-70-3
Staff and Faculty Development

TP 350-70-4
Systems Approach to Training: Evaluation

TP 350-70-5
Systems Approach to Training: Testing

TP 350-70-10
Systems Approach to Training: Course and Courseware Validation

TP 350-70-12
Distributed Learning – Managing Courseware Production and Implementation

TP 350-70-16
Army Training and Education Proponents

TP 525-3-0
The Army Capstone Concept

TP 525-8-3
The U.S. Army Training Concept (ATC) 2012-2020

Section III
Prescribed Forms
This section contains no entries.

Section IV
Referenced forms
Official Department of the Army (DA) publications and forms to include DA forms are available at http://armypubs.army.mil/index.html.

DA Form 260
Request for Publishing

DA Form 1045
Army Ideas for Excellence Program (AIEP) Proposal

DA Form 2028
Recommended Changes to Publications and Blank Forms

DA Form 5165-R
Field Expedient Squad Book

DA Form 7566
Composite Risk Management Worksheet

Appendix B
Product and Supporting Product Checklists

B-1. Job analysis checklist
Use the job analysis process to identify the individual critical tasks (including leader tasks) performed by jobholders to accomplish their missions and duties. Valid individual critical tasks form the basis of Army learning products and ensure that the learning products are relevant, valid, and meet the needs of the operating forces. A job analysis checklist example is provided in table B-1.

Table B-1
Job analysis checklist example

Job Analysis Checklist	
Verify that each task meets the following requirements:	
• Is there a comprehensive list of proponent jobs?	Yes
▪ Are all proponent jobs included in the list?	
▪ Are all proponent jobs identified by number and title?	
▪ Does the proponent maintain a current target audience description of each job?	
• Is a proponent total task inventory maintained for each job?	
▪ Is the total task inventory comprehensive?	
▪ Does the total task inventory include Active Army, Army Reserve, and Army National Guard jobs?	
• Has a job analysis survey been conducted on each proponent job? Did the survey:	
▪ Measure the approved total task inventory?	
▪ Collect data from a valid target audience sampling, as appropriate?	
▪ Collect valid data?	
• Does each critical task meet the individual task title writing standards?	
▪ Does each task title:	
o Start with a verb from the approved verb list (see TRADOC Pamphlet 350-70-1)?	
o Include an object?	
o Include a qualifier?	
▪ Was the task title written in title case?	
• Was a valid critical task and site selection board conducted? Specifically:	
▪ Were the board members valid subject matter experts (master task performers from field units)?	
▪ Was the entire target audience adequately represented?	
▪ Was the board allowed to do its job without undue command influence?	
• Did the proponent commander/commandant approve each identified critical task for a specified job?	
• Did the proponent provide update information for the AR 611-(series)?	

B-2. Course master checklist
Use the checklist in table B-2 to ensure all elements of the course are present and comply with published guidelines.

Table B-2
Course master checklist example

Evaluator's Name Title/Phone #:					
Course #, Title, and Version:					
TDC Course Master QC Checklist (Note: Fields marked (*) are required)					
Evaluation Steps for Course Master	TDC Examples/Guidance	Yes	No	NA	Comments
Step 1 - General Information					
*Course Number:	Exact per ATRRS or follows Course Number Policy (TRADOC Memo dated 15 Mar 13, TRADOC Course Title and Numbers)	X			
*Course Title:	Exact per ATRRS or follows Course Number Policy (TRADOC Memo dated 15 Mar 13, TRADOC Course Title and Numbers)				
*Version:	When making changes to Version, only use numeric values and format as XX.X				
*Security Domain:					
*Security Subdomains:					
*Proponent:					
Security Classification:					
TATS Course	Check Block				
Step 2 - Purpose, Scope, Prerequisites					
*Purpose:					
*Scope:					
*Prerequisites:					
Step 3 - Action Officers					
*Developer/ Analyst(s)					
*Manager					
*Confirmer/ Approver					
SME					
Step 4 - Lessons					
Step 5 - Distribution Restriction					
Step 6 - Foreign Disclosure					

B-3. Lesson plan checklist

This checklist in table B-3 provides a guide for evaluating the lesson plan. Apply judgment based on regulatory requirements and your knowledge of lesson plan design.

Table B-3
Lesson plan checklist example

LESSON PLAN CHECKLIST	YES	NO
1. Does the lesson plan currently exist in another course?		X
2a. Does the lesson plan number comply with the PPPP-NNNNNNNN format? Refer to Figure 7-1 of this pamphlet for format content		
2b. Does the lesson plan number reflect the designated proponent responsible for the lesson plan?		
2c. Does the version and edition number comply with the whole number + decimal + whole number format? Refer to Figure 7-2 of this pamphlet for format content.		
3a. Does the title describe the subject or focus of the lesson and does it provide complete clarity when read?		
3b. Does the title consist of a subject only?		
3c. If the lesson is task-based, does the lesson plan title match or closely resemble the subject of the supported task?		
3d. Is the title 45 characters or less in length?		
4a. Does the learning objective action statement specify the learner leader competency or performance expected?		
4b. Does the learning objective action statement begin with a present tense action verb that supports the level of complexity the action describes?		
4c. Does the learning objective conditions statement describe the conditions under which the objective is taught?		
4d. Does the learning objective standards statement describe the minimum acceptable end result of the learning to be achieved?		
4e. Does the learning objective standards statement include and describe the critical elements necessary for adequate learning objective performance?		
4f. If more than one learning objective, are the learning objectives sequenced in a logical order to promote learning?		
5a. Does each learning step contribute to performance of the supported learning objective?		
5b. Does each learning step begin with a single verb that is appropriate for achieving the required level of learning?		
5c. Does the lesson plan contain steps that involve active learning?		
5d. Are the learning steps written in learner-action terms?		
5e. Are the learning step activities sequenced to maximize learning?		
6a. Was the method of instruction (MOI) established for each learning step activity?		
6b. Was cost effectiveness considered during MOI selection?		
6c. Was the selected MOI appropriate for the required learning and does it support the learning objective?		
7a. Was a specific instructional media identified?		

Table B-3
Lesson plan checklist example, cont.

LESSON PLAN CHECKLIST	YES	NO
7b. Was the media identified by number and name? For example "DVD# NV-3456 or PowerPoint slides # 3 through 7."		
7c. Was the most efficient and cost effective media selected to present the learning step activity?		
8. Was the instructor-to-student ratio established in accordance with TRADOC guidance?		
9. Was the instructor and student-to-equipment ratio established when appropriate and was it logical?		
10. Is the instructional time (academic time) required to present the required learning documented in minutes for each learning step activity?		
11. Have all resources required to conduct each learning step activity been identified and documented in the [TDC] database? This includes but is not limited to: instructors/facilitators, support personnel, classrooms, labs, training areas, ranges, OPTEMPO, ammunition, equipment, consumables, etc.		
12. Does the lesson plan identify safety factors and hazards when appropriate?		
13. Does the lesson plan identify risk assessment codes when appropriate?		
14. Does the lesson plan identify security requirements when appropriate?		
15. Does the lesson plan identify environmental considerations when appropriate?		
16. If not tied to a task, does the lesson plan follow an Accountable Instructional System (AIS) process? (See TP 350-70-7 for more information on AIS.)		

B-4. Job aid checklist

Use the checklist in table B-4 to help gather feedback about a given job aid. Ask performers to use the job aid to complete the work. Then gather feedback from the performers regarding the job aid.

Table B-4
Job aid checklist example

Job Aid Checklist	Yes	No
Was the job aid technically and doctrinally accurate? If not, specify inaccuracy.	X	
Was a job aid appropriate for this task? If not, why not?		
Did the job aid help transfer skills back to the job?		
Was the job aid easy to use? If not, why not?		
Was the job aid sufficiently comprehensive? If not, what should be added?		
Was the job aid too detailed? If so, how?		
Was the language clear? If not, specify where it was unclear.		
Were visuals helpful? If not, specify where not.		
Was the right type of job aid used? (procedural, informational, coaching)		
Did the job aid show all the actions in order?		
Could this job aid be improved?		

B-5. TSP checklist

Use the checklist in table B-5 to ensure all elements of the TSP are present and in compliance with published guidelines.

Table B-5
TSP checklist example

Evaluator's Name/Title/Phone #:				
Individual TSP #, Title, and Version:				
TDC Individual TSP QC Checklist *(Note: Fields marked (*) are required)*				
Evaluation Steps for Individual TSP	**TDC Examples/Guidance**	**GO**	**NO-GO**	**Comments**
Step 1 - General Information				
*ID:				
*Title:				
*Version:				
*Proponent:				
*Security Domain:				
*Security Subdomains:				
Step 2 - Category Items				
Step 3 - Purpose, Users, Special Instructions				
Purpose:				
TSP Users:				
Special Instructions:				
Step 4 - Safety, Environmental				
Safety:				
Environmental:				
Step 5 - Improvement Comments:				
Step 6 - Action Officers				
*Developer/Analyst(s)				
*Manager				
*Confirmer/Approver				
SME				
Step 7 - Distribution Restriction:				
Step 8 - Foreign Disclosure:				
Step 9 - Lessons:				
Step 10 - Transition Statements:				

Appendix C
Review Boards

C-1. Critical task and site selection board

a. General. The CTSSB will convene as directed by the commandant/director of training (C/DOT), or a designated representative. The board will be conducted either face-to-face or virtually. Refer to TR 350-70 for detailed instruction on the conduct, outcomes and products generated from the CTSSB

b. Applicability. The requirements established in this appendix apply to all TRADOC organizations responsible for conducting CTSSBs.

c. Board membership. TP 350-70-1 provides guidance for board membership in table F-1. This table can be found on TED-T.

d. Non-participation/observers. C/DOT will invite one representative from organizations that have a vested interest in the particular job for which the task board is being conducted. The individual will not be a voting member and should not try to influence board members.

e. Responsibilities of board members. All board members should be SMEs. During board proceedings, board members will not be in a subordinate or superior position to other board members. Each board member will have an equal vote on critical task selection. Board members will:

(1) Review the task data package before the board convenes.

(2) Determine the criticality of each task based on the task selection criteria.

(3) Vote on each task as either critical or non-critical and site determination.

(4) Ensure ARNG/USAR requirements are included in the decision.

f. ICTL. ICTLs will reflect the tasks selected by a majority vote of board members. Following coordination and analysis, the recommended ICTL will be submitted to the C/DOT for approval or disapproval. Provide the approved ICTL to appropriate organizations. There is a site selection tool available through TED-T for use or adaptation.

g. Moderator/facilitator. C/DOT will appoint a moderator/facilitator who will serve in that capacity during the course of the board proceedings. The moderator/facilitator will:

(1) Prepare and distribute information and direction to the board members.

(2) Provide selection criteria relative to each mission or task considered for selection.

(3) Ensure audit trail data is available for each mission or task.

(4) Prepare final list of critical missions or tasks, conduct staffing, and submit coordinated document to the C/DOT for approval or disapproval.

h. Changes to the ICTL. Any organization can recommend changes, additions, or deletions to the task lists or content changes/updates to reflect current combat conditions pertaining to specific tasks. Recommendations must be submitted with supporting rationale, (e.g., doctrinal changes and approved lesson(s) learned), through the unit's chain of command to the proponent C/DOT. Make task analysis changes as often as needed to reflect DOTMLPF changes. The proponent C/DOT is the approval authority for all tasks and ICTLs.

i. An example of an ICTL can be found at Appendix D-1 of this document.

C-2. Training Development Capability (TDC) working group

a. General. The TDC working group meets semi-annually in conjunction with the C/DOT Conference to review and approve the prioritized list of enhancements developed by all TDC users. This working group presents recommended priorities, timelines, and funding requirements to the DA G3 DOT and the DCG, CAC-T for approval.

b. Applicability. The requirements established in this appendix apply to all TRADOC organizations responsible for participating in this work group.

c. TDC enhancements working group membership will be composed of:

(1) Voting members. Representatives from the Army Centers of Excellence (Maneuver Support, Mission Command, Fires, Maneuver, Sustainment, Signal, Intelligence, IMT, and Aviation), the U.S. Army Special Operations Center of Excellence, and the Army Medical Department Center and School serve as the working group voting members. In the event of a tie in addressing an issue, the chair casts the deciding vote.

(2) Non-voting members (functional and technical advisors): working group chair, working group co-chair, and representatives from any other organization that is a principle user of TDC. All non-voting members are encouraged to participate in working groups and submit user enhancements for consideration by the board. Users submitting enhancements should be prepared to brief recommendations to working groups.

(3) Invitees. Other organizations or individuals may be invited to attend a TDC working group meeting, provided a member sponsors them, and their attendance is coordinated with the TDC working group chair. The sponsoring member coordinates participation of invitees.

NOTE: Contractor participation may be restricted if contractor sensitive data is discussed.

d. Responsibilities.

(1) The DCG, CAC-T approves recommendations on priorities, timelines, and funding requirements/priorities.

(2) Director, TMD, CAC. The director, TMD, CAC-T chairs and hosts the working group; provides the secretary that maintains the charter and attendee distribution lists, publishes agendas and minutes; and maintains the TDC SharePoint site. The TMD director serves as the TDC functional proponent responsible for coordinating and prioritizing user enhancement requirements and policy alignment to improve TDC functionality. Additionally, the TMD director coordinates TDC user testing and functional acceptance of TDC upgrades to the technical proponent.

(3) Commander, ATSC. The commander, ATSC co-chairs and co-hosts the working group; assists the chair in identifying agenda items and provides technical assistance to working groups when required. The ATSC commander serves as the TDC technical proponent responsible for providing software solutions for identified TDC requirements, as defined by functional proponents and prioritized by the working group; sustaining TDC hardware and software; providing and sustaining relevant TDC training plans, user manuals, and TSPs; providing impact/supportability from a hardware and software perspective on user enhancements; recommending hardware and software upgrades to the working group; and in close coordination with the functional proponent, developing test plans for new functionality.

(4) Members. Members review agenda items and provide their organization's official position at meetings. In the event the member is unable to attend a scheduled meeting, the member must forward a written position on changes requested (minimum of 10 working days prior) to the secretary.

(5) TDC Users. Users submit enhancements via the TDC SharePoint site and participate in the TDC working group to help develop a prioritized list of enhancements for TDC working group review and approval.

e. Administrative information.

(1) The working group meets semi-annually by VTC and/or in person.

(2) Member organizations are responsible for funding their participation and/or arranging for VTC site.

(3) The TDC Enhancements Working Group Charter is reviewed annually; however, the chair and co-chair may recommend changes or revisions at any time. Revisions to the charter will be approved by the DCG, CAC-T and documented by TDC working group secretary.

Appendix D
Product and Supporting Product Examples

The products in this appendix are examples from TDC of how a proponent center/school accounted for the information. Different proponents may have different SOPs, solutions, data, or answers, but will still use the same fields in the TDC products. These are examples only, not necessarily best practices or comprehensive solutions.

D-1. Individual critical task list example

Table D-1 provides an example of the ICTL built in TDC.

Table D-1
Individual critical task list example

General Information			
Title: 12B10 Critical Task List **Job**: 12B **Proponent**: 052 – Engineer (Individual) **Security Domain**: EN **Security Subdomains**: COMBAT ENGINEER		**Status**: Approved **Status Date**: 03 JUL 2013	
Target Audience Description			
12b Skill level one Soldiers			
Tasks			
Task Number	**Task Title**	**Status**	**Proponent**
071-025-0003	Load an M240B Machine Gun	Approved	071- Infantry (Individual)
071-COM-4027	Load an M249 Machine Gun	Approved	071- Infantry (Individual)
052-192-1600	Assist in the Employment of the Anti-Personnel Obstacle Breaching System (APOBS) for Breaching Operations	Reviewed	052 - Engineer (Individual)
052-192-1601	Assist in the Recovery of the Anti-Personnel Obstacle Breaching System (APOBS)	Approved	052 - Engineer (Individual)
052-197-1327	Assist with the Construction of the Bailey Bridge	Approved	052 - Engineer (Individual)
052-221-1002	Breach a Door with Manual Techniques	Approved	052 - Engineer (Individual)
052-221-1004	Breach a Wall with Manual Techniques	Approved	052 - Engineer (Individual)

D-2. Course example (TDC format)

The example below, taken from TDC, is a copy of course information from an actual course.

Battle Staff Noncommissioned Officer Course
250-ASI2S / Version 1.0

Status: Approved

Status Date: 17 Nov 2011

General Information
Course Number: 250-ASI2S
Version: 1.0
Title: Battle Staff Noncommissioned Officer Course
Security Domain: USASMA
Security Subdomain BSNCOC

Security Classification: This course/lesson will present information that has a Security Classification of: U - Unclassified.
TATS Course: Yes

Purpose, Scope, Prerequisites
Purpose: The BSNCOC is a branch-immaterial functional course for SSG through SGM selected for staff assignments. The course provides technical and tactical training that is relevant to missions, duties, and responsibilities assigned to staff members in battalion and brigade-level units. Graduates of the BSNCOC are identified by award of ASI 2S.

Scope: Battle Staff uses the small group instruction strategy. Subject areas include Stability Operations; Command and Control; Sustainment Operations; Brigade Combat Team Structures; Contemporary Operational Environment (COE); Graphics and Overlays; Plans, Orders and Attachments; Military Decision Making Process (MDMP); Intelligence Preparation of the Battlefield (IPB); Military Briefings; Operations Security (OPSEC); and Urban Operations; and Joint Operations introduction and overview.

Prerequisites: PREREQUISITE SETS FOR COURSE 250-ASI2S

1. ACTIVE ARMY Verifiable Prerequisites Service (Army) Component A - Active Army Pay Grade E6 through E9 Prerequisite Courses: None Text Prerequisites Must meet height/weight in accordance with AR 600-9. Must be assigned (or projected for assignment) to an ASI
2S-coded position.

2. ARMY RESERVE Verifiable Prerequisites Service (Army) Component R – USAR Pay Grade E6 through E9 Prerequisite Courses: None Text Prerequisites Must meet height/weight in accordance with AR 600-9.Must be assigned (or projected for assignment) to an ASI 2S-coded position.

3. ARMY NATIONAL GUARD Verifiable Prerequisites Service (Army) Component G – ARNG Pay Grade E6 through E9 Prerequisite Courses: None Text Prerequisites Must meet height/weight in accordance with AR 600-9.Must be assigned (or projected for assignment) to an ASI 2S-coded position.

Action Officers

Role	Name	Army Knowledge Online Email	DSN Phone
Developer	John Smith	john.smith@us.army.mil	(808) 555-5555
Manager	Bob Jones	bob.jones @us.army.mil	(808) 555-5555
Approver	Jane Doe	jane.doe@us.army.mil	(808) 555-5555

Lessons Linked To Course Master

ID	Ver	Title	Proponent	Status
400-250-W121	2	Command Post of the Future (CPOF)	400 - Sergeants Major (Individual)	Approved
400-250-W120	2	Staff Journal	400 - Sergeants Major	Approved

			(Individual)	

Distribution Restriction
Distribution authorized to U.S. Government agencies only

Foreign Disclosure
The materials contained in this training event/course have been reviewed by the training/educational developers in coordination with the United States Army Sergeants Major Academy FD authority. Some component(s) of this training event/course is (are) NOT releasable to students from foreign countries. See each TSP subcomponent/product for applicable FD restriction statement.

Phases, CADS, and POIs

Options	Custom Phase No.	Type	Status	Status Date	Modules
Course					
		COURSE	Approved	17 Nov 2011	N/A
Unphased					
		CAD	Commandant Approved	09 Feb 2012	
		POI	Approved	04 Jun 2012	Module-A - AdministrativeModule-E - ExaminationsModule-H - HistoryModule-R - RetestingModule-W - Warfighter

Appendix E
ICTL to Lesson Crosswalk

Figure E-1 provides a sample format for cross-walking critical tasks to lessons.

Critical Task Number/ Title	Lesson Number/ Title/Version #	Taught/ Supported/ Reinforced	List task steps taught/ supported	LP the CT is evaluated in	Assessment Strategy
Module A					
301-35T-1023 / Align Radio Frequency (RF) Receivers	301-35T1I14L / Schematic Analysis of the R-2174, HF Receiver / Version 3.0	**Taught Task:** 301-35T-1023 (Taught Task is identified by an asterisk on LP Synopsis Report). **Supported Tasks:** 301-35T-1024; 301-35T-1025; 301-35T-1026 (A supported task is one which will be taught later in the course. The lesson plan that teaches the taught task provides initial training for one or more of the performance steps, skills, or knowledge of the supported task). **Reinforced Task:** 301-35T-1035 (A task identified as reinforced is one for which the lesson provides refresher training. Reinforced tasks have been completely trained in a previous lesson.	The task steps in the individual task listed as taught will become the Learning Step/Activities (LSAs) in the lesson plan. The task for this lesson plan has three performance steps which became the LSAs for the lesson plan. 1. Determine the performance objectives for the applicable receiver. 2. Perform the sensitivity measurements for the applicable receiver. 3. Perform the noise figure measurements for the applicable receiver.	301-35T1A04T (DC Fundamentals Phase Test) version 3.0	Test
Module B					

Figure E-1. ICTL to lesson crosswalk

Appendix F
Learning Step Activity Sequencing
Figure F-1 provides an example of sequencing LSAs to support Learning Objectives.

Sample Sequencing of Learning Step Activities (LSAs) by MOI to Support Learning Objectives (LOs)

Lesson Number: 123-123-1234 **Lesson Title:** Casualty Evaluation **Total Time:** XX hrs / xx min

Experiential Learning	LO A	LO B	LO C	LO D	LO E
Case Study					
Conducting Experiments					
Field Observations					
Field Trip/ Site Visit					
Gaming					
Model Building					
Practical Exercise (Hands-On/ Written)	LSA 4-7 (time)				
Role Playing					
Simulation					
Story Telling					

Collaborative/Interactive Instruction	LO A	LO B	LO C	LO D	LO E
Brainstorming					
Cooperative Learning Groups					
Debates					
Discussion (Small/Large Group)	LSA 2 (time)				
Interviewing					
Laboratory Groups					
Panel					
Peer Partnering					
Problem Solving					
Role Playing					
Seminar					
Tutorial					

Indirect Instruction	LO A	LO B	LO C	LO D	LO E
Brainstorming					
Case Study					
Concert Mapping					
Inquiry					
Problem Solving					
Reflective Discussion					
Tutorial					
Writing Assignments					

Independent Study	LO A	LO B	LO C	LO D	LO E
Interactive Multimedia Instruction					
Tutorial					
Writing Assignments					

Direct instruction	LO A	LO B	LO C	LO D	LO E
Compare and Contrast					
Demonstration	LSA 3 (time)				
Drill and Practice					
Guided Reading and Thinking					
Lecture	LSA 1 (time)				
Structured Overview					
Tutorial					

Figure F-1. Sample sequencing of learning step activities to support learning objectives

Appendix G
Methods of Instruction

a. MOI selection requires consideration of the learner, the content, the goals, the learning environment, the instructor/facilitator, and the available resources. Table G-1[2] identifies commonly used MOIs that support the five instructional strategies from table 7-5. Although particular methods are often associated with certain strategies, some methods may be found within a variety of strategies. Several of the MOI descriptions below were retrieved with permission from http://schools.spsd.sk.ca/curriculum/instructionalstrategies/.

b. The list below represents the preferred MOIs that have been incorporated into the CAC-approved automated system for training and education development.

Table G-1
Methods of instruction

Method	Description	Uses
Brainstorming	A method of generating ideas to solve a problem. This can be done by an individual or by a group. Brainstorming is usually done by the unrestricted sharing of ideas as soon as they are generated and captured in writing.	Generates uninterrupted and uninhibited ideas. Learners develop possible solutions to unpredictable situations or problems. Brainstorming focuses on producing a large quantity of ideas, promotes unusual ideas, and combines and improves ideas to form better more comprehensive solutions.
Case study	The instructor/facilitator presents a description of a situation and the learners must solve problems or identify actions related to the situation. Situations are often an ethical dilemma, a controversial topic, or a problem to solve. At the end of the case study, the learners are generally provided with the real world solution for comparison.	Illustrates concepts and encourages critical thinking skills. Offers a method of learning about complex situations through description and analysis. Fosters debate and discussion. Promotes higher order thinking skills. Case studies may be used as an ice breaker for a course, as a discussion board prompt, or as a test or quiz question.
Compare and contrast	Comparing two things is telling how they are alike; whereas, contrasting two things is telling how they are different. It is a process where the act of classification is practiced.	Used to help learners distinguish between types of ideas or to group similar ideas, engage in critical thinking, and go beyond mere description or summary to generate analysis. It can be used to help learners identify language cues and gain a deeper comprehension of the items being compared. It can also be used to facilitate indirect instruction through concept formation or concept attainment. It is often presented in either written text paragraphs or a chart. Its most common use is as a graphic organizer of content.

[2] Saskatoon Public Schools (2004-2009), Instructional Strategies Online, Retrieved from http://olc.spsd.sk.ca/de/pd/instr/experi.html

Table G-1
Methods of instruction, cont.

Method	Description	Uses
Concept mapping	A special form of a web-like diagram for exploring knowledge and gathering and sharing information. A concept map consists of nodes or cells that contain a concept, item or question, and links. The links are labeled and denote direction with an arrow symbol. The labeled links explain the relationship between the nodes. The arrow describes the direction of the relationship and reads like a sentence.	Can be used to develop a comprehension of a body of knowledge, explore new information and relationships, access prior knowledge, gather new knowledge and information, share knowledge and information generated, design structures such as web sites and multi-media presentations, and problem solving options.
Conducting experiments	A procedure conducted to prove or disprove hypotheses. Experiments are conducted under well-regulated conditions to ensure results can be duplicated/verified. Learning occurs throughout the process and through analysis of the results.	Used to learn something new and discovering an explanation of why something happens. Promotes active learning to exploit natural curiosity. Experiments can be used to introduce new ideas or to clarify puzzling aspects of topics with which learners typically struggle. Puts learners in a position to build ownership of the new idea and use it to facilitate future learning.
Cooperative learning groups	A method in which small teams, each with learners of different levels of ability, use a variety of learning activities to improve their comprehension of a subject. Each member of a team is responsible not only for learning what is taught but also for helping teammates learn, thus creating an atmosphere of achievement. Learners work through the assignment until all group members successfully comprehend and complete it.	Provides learners with the tools to work in a collaborative environment. Elements of cooperative learning include positive interdependence, face-to-face interaction, individual accountability, social skills, and group processing.
Debates	A structured contest of argumentation in which two opposing individuals or teams defend and attack a given proposition. The procedure is bound by rules that vary based on location and participants. The process is adjudicated and a winner is declared.	Engages learners in a combination of activities that causes them to interact with the curriculum. Debate forces the participants to consider not only the facts of a situation but the implications as well. Participants think critically and strategically about both their own and their opponent's position. The competitive aspects encourage engagement and a commitment to a position. Improve communication skills.
Demonstration	An action is executed to a prescribed standard by a subject matter expert. Learning occurs through observation.	Helps people who learn well by modeling others. Provides opportunity for targeted questions and answers. Allows attention to be focused on specific details.

Table G-1
Methods of instruction, cont.

Method	Description	Uses
Discussion (small or large group)	A verbal exploration of a topic, object, concept, or experience. Learners are provided frequent opportunities to generate and share their questions and ideas in small and whole class settings. Instructors/facilitators encourage and accept questions and comments without judgment of the learner. The role of the instructor/facilitator is to clarify comprehension by paraphrasing difficult terms, and to focus the discussion.	Stimulates thought, explanation, reflection, and recall, and provides learners the opportunity to clarify and expand their ideas and those of others. This method also promotes positive group interaction and conversation, and develops questioning techniques.
Drill and practice	Drill and practice, like memorization, involves repetition of specific psychomotor or cognitive skills (addition and subtraction, spelling, marksmanship). The skills built through drill-and-practice should become the building blocks for more meaningful learning. Drill and practice may also be found in more sophisticated learning tasks that involve more than one learner.	Helps the learner master materials at his or her own pace and is used as a reinforcement tool. Effective use of drill and practice depends on the recognition of the type of skill being developed, and the use of appropriate techniques to develop these competencies. Allows for transfer of knowledge from working memory to long-term memory.
Field observations	Noticing and recording significant activities in a natural (as opposed to a classroom or laboratory) environment.	Uses a combination of observation and inquiry to collect information and see as many concrete behaviors as possible without filtering them through any interpretive process.
Field trip/site visit	Learners visit a place away from their regular environment to acquire information needed to support a specific learning objective. The instructor/guide may provide background material concerning the site.	Motivates participants and shows the relationship between provided information and the reality of the location. Provides a more hands-on and interactive experience, provides variety, and may spark new interests and passions.
Interactive multimedia instruction	The term "interactive multimedia instruction" (IMI) applies to a group of predominantly interactive, electronically-delivered instruction and instructional support products. IMI is a computer-based technology integrating a combination of, but not limited to, text, graphics, animation, sound, and video with which the learner interacts.	IMI products include instructional software and software management tools used in support of instructional programs.
Gaming	Activities where learning occurs as a result of competition using artificial mediums, such as simulations, that replicate actual environments and stimulate decision making and other actions.	Learners receive immediate feedback for increased learning, and determine solutions to unpredictable situations. Gaming provides for improved visualization, creative inspiration, collaboration, teamwork, planning ahead, and connecting new concepts to prior experiences.

Table G-1
Methods of instruction, cont.

Method	Description	Uses
Guided reading and thinking	Learner's comprehension of a selection is guided and developed by instructor/facilitator questions. The focus is on the use of context to predict meaning.	Enables learners to establish and verbalize purposes for reading. This method develops the learners' story sense, and encourages learners to use past experiences such as their knowledge of language and context clues to aid comprehension.
Inquiry	A method that provides learners opportunities to actively develop skills that enable them to locate, gather, analyze, critique, and apply information in a wide range of contexts as they develop comprehension.	Can be used by individuals or small groups to develop research skills. A topic or question is identified and researched. Helps learners analyze the information, prepare reports, and present information.
Interviewing	A discussion period where the interviewer asks a series of questions of a subject matter expert on a pertinent topic. This is a personal form of research where the interviewer learns by developing questions, has the opportunity to probe or ask follow-on questions, and analyzing the responses provided.	Helps the learner develop appropriate questions without bias or preconception. Evaluation of the interview responses improves analysis skills.
Laboratory groups	A working group that uses a structured problem-solving process in a highly controlled environment to predict outcomes.	Working in groups makes instructing/facilitating more manageable as interaction occurs between the instructor/facilitator and five or six groups versus all individual learners. Learners in a group provide their thoughts which lead to discussions. The discussion tends to bring alternate conceptions to the surface for all participants to consider.
Lecture	An oral presentation intended to present information about a particular subject within a limited time frame. Lectures delivered by talented speakers can be highly stimulating, and have proven to be a quick, cheap, and efficient way of introducing large numbers of learners to a particular subject. Voice, gestures, movements, facial expressions, and eye contact are all influential in capturing and holding the learners interest and increasing their retention.	Lectures are used to convey critical information, history, background, theories, and equations.
Model building	A learner designs/creates a physical or computer-generated replica of an actual item. Learning occurs through the building process.	Physical construction of a model helps the learner generate, visualize, and evaluate ideas. Model building enhances creative thinking, and helps learners become more aware of their own meta-cognitive design strategies.

Table G-1
Methods of instruction, cont.

Method	Description	Uses
Panel	Several subject matter experts combine to facilitate learning by providing personal observations and/or experiences on a particular topic. Sessions with panels usually include a question and answer period.	Provides a variety of views and opinions concerning material or a problem for which there is no one correct solution. Helps the audience further clarify and evaluate its positions regarding specific issues or topics being discussed and increases their comprehension of multiple points of view.
Peer partner learning	Peer partner learning is a collaborative experience in which learners learn from and with each other for individual purposes.	Learners reflect upon previously taught material by helping peers to learn and, at the same time, develop and hone their social and communication skills.
Practical exercise (hands-on/written)	An activity where learner proficiency is enhanced by practicing a new or recently learned skill or task.	Permits the learner to reinforce new learning. Contributes to physical independence or intelligence to acquire new skills.
Problem solving	Focuses on knowing the issues, considering all possible factors, and finding an acceptable solution. Because all ideas are accepted initially, problem solving allows for finding the best possible solution as opposed to the easiest solution or the first solution proposed. Defining what the problem looks like is separated from looking at the cause of the problem to prevent premature judgment. Clarifying what makes an acceptable solution is defined before solutions are generated, preventing preconceptions from driving solutions.	Used to help learners think about a problem without applying their own pre-conceived ideas. Used to help learners consider second and third order effects of the proposed solution(s). Learners think about a problem within a set of parameters.
Reflective discussion	The instructor/facilitator initiates a discussion by asking a question that requires learners to reflect upon and interpret films, experiences, read or recorded stories, or illustrations. The questions posed should encourage learners to relate story content to life experiences and to other stories.	Allows the learner to gain knowledge through their experiences, analysis, imagination, affect, and impression (reflection). Reflective discussions encourage learners to think and talk about what they have observed, heard, or read.
Role playing	Learners act out a simulated situation, position, or job. For example, a learner may assume the duties of a staff member and perform the work of that position.	Develops empathy and new insights. Stimulates discussion and communication. Provides a means to assess decision making in a specific role. Allows for a variety of situations and parameters that garner attention, participation, and motivation. Promotes comprehension of other people's positions and their attitudes as well as the procedures used for diagnosing and solving problems.

Table G-1
Methods of instruction, cont.

Method	Description	Uses
Seminar	A facilitated, small-group discussion, usually preceded by a presentation on a pertinent topic by a subject matter expert.	Seminars place the focus on the input of all the seminar participants to: familiarize participants more extensively with the methodology of their chosen field, allow participants to interact with practical problems that could commonly occur, and provide a broader perspective of a particular topic.
Simulation	Any representation or imitation of reality simulating part of a system, the operation of a system, and the environment in which a system will operate are the three common types. There are virtual and constructive simulations.	Replaces/complements live training. Provides the means to safely practice an action or activity under any condition. Can be used for individual training and education (such as repairing equipment or gunnery) or unit training (such as fighting a tank or tank company). May be used on a single computer or station, distributed over a local area network, or used on a wide area network to multiple simultaneous users.
Story telling	A subject matter expert uses vignettes (real or made up) to convey information or ideas, or to stimulate thought or discussion.	Provides a means of sharing and interpreting experiences. Storytelling can be used as a method to teach ethics, values, and cultural norms and differences. Stories provide a tool to transfer knowledge in a social context. They increase verbal proficiency and encourage the use of imagination and creativity.
Structured overview	Verbal, visual, or written summary or outline of a topic. It can occur at the beginning of a unit, module or new concept, or it may be used to help relate a learned idea to the big picture. A Structured overview distills a difficult or complex idea into simple definitions or explanation, and then shows how all the information relates. It is the process of "organizing and arranging topics" to make them more meaningful.	Helps learners place new ideas in context. Because ideas are simplified, it is easier for learners to see "the big picture". In addition, connecting new ideas to information learners already comprehend makes it easier to retain.
Tutorial	A subject matter expert provides assistance to one or a small group of learners, usually to enhance previously taught lessons. Tutorials are characterized by a high degree of student-instructor interaction.	Develops or enhances skills, develops effective study habits, increases self confidence, and increases the learners comprehension of the subject matter.

Table G-1
Methods of instruction, cont.

Method	Description	Uses
Writing assignments	Writing assignments can have a broad range of styles. A writing assignment succeeds by addressing a defined audience with content organized into an effective and/or convincing presentation. For example, the learning log has a different purpose, components, and style than an essay; a report has a different purpose, components, and style than a white paper. Forms of writing may include essays, journals, learning logs, reports, and narratives.	Improves writing skills and requires critical thinking about the subject, purpose, and the audience. Organizes thoughts, allows for communicating effectively, conceptualizing ideas, convincing others, increasing meta-cognition, and identifying critical information.

Glossary

Section I
Acronyms

AA	Active Army
AAR	after-action review
ADDIE	analysis, design, development, implementation, and evaluation
ADP	Army doctrine publication
ADRP	Army doctrine reference publication
ALM	Army Learning Model
AOC	area of concentration
AR	Army regulation
ARFORGEN	Army force generation
ASI	additional skill identifier
ATRRS	Army Training Requirements and Resources System
ATSC	Army Training Support Center
CAC	Combined Arms Center
CAC-T	Combined Arms Center – Training
CAD	course administrative data
C/DOT	commandant/director of training
CMF	career management field
CMP	course management plan
CoE	Center of Excellence
CRT	criterion-referenced test
CTSSB	critical task and site selection board
DA	Department of the Army
DL	distributed learning
DOTMLPF	doctrine, organization, training, materiel, leadership and education, personnel, and facilities

ELO	enabling learning objective
FD	foreign disclosure
FDO	foreign disclosure office or officer
FM	field manual
GLO	general learning outcome
GTA	graphic training aid
HQDA	Headquarters, Department of the Army
ICTL	individual critical task list
ID	identification
IMI	interactive multimedia instruction
IMT	initial military training
ISAP	individual student assessment plan
ISD	instructional system design
ITP	individual training plan
ITRO	Interservice Training Review Organization
LMS	learning management system
LSA	learning step activity
MOI	method of instruction
MOS	military occupational specialty
OPFOR	opposing force
PE	practical exercise
PME	professional military education
POI	program of instruction
QA	quality assurance
QAO	Quality Assurance Office
QC	quality control
RC	Reserve Component
SME	subject matter expert
SOP	standard operating procedure
SQI	skill qualification identifier
STP	Soldier training publication
TADSS	training aids, devices, simulators, and simulations
TASS	The Army School System
TATS	Total Army Training System
TC	training circular
TD	training development
TDC	training development capability
TED-T	training and education developer toolbox
TLO	terminal learning objective
TMD	Training Management Directorate
TP	TRADOC pamphlet
TR	TRADOC regulation
TRADOC	U.S. Army Training and Doctrine Command
TRAS	training requirements analysis system
TSP	training support package
TTI	total task inventory

USAR	United States Army Reserve
UTL	unit task list

Section II
Terms

Accreditation
A disciplined approach to ensuring standardization across the Army. It assures the command that training institutions meet accepted standards and higher headquarters guidance; it addresses the quality of our graduates and other concerns from the field.

Active learning
An approach to instruction in which students engage the material they study through reading, writing, talking, listening, and reflecting. Active learning focuses the responsibility of learning on the learners.

Analysis
A phase in the ADDIE process required when addressing needs, outcomes, target audiences, missions, collective tasks, jobs, individual tasks, topics, and resources.

Analysis, design, development, implementation and evaluation (ADDIE)
An instructional system design process used by training and education developers to build learning products.

Army force generation (ARFORGEN)
ARFORGEN is the structured progression of increased unit readiness over time to produce trained, ready, and cohesive units prepared on a rotational basis for operational deployment and other Army requirements.

Army Learning Model
ALM describes the framework, required capabilities, and on-going actions to implement a learner-centric, technology enabled, and career-long institutional learning model.

Assessment
The measurement of learning by an individual. Assessment of a learner is often accomplished through a test of whether or not skills, knowledge and/or performance have been attained.

Asynchronous learning environment
An asynchronous learning environment exists when communication between the instructor/facilitator and the student(s) is not simultaneous (AR 351-9).

Attribute
A quality, property or characteristic of an individual that moderates how well learning and performance occur.

Behavior
Specifies what a learner must do to satisfy a job performance requirement. Behavior may involve recall, manipulation, discrimination, problem-solving, performing a step-by-step procedure, or producing a product.

Behavioral statement
Statement of the behavior the learner must exhibit. If a condition or standard is needed to clarify the behavior, either or both should be included.

Best practice
A method or technique that has consistently shown results superior to those achieved with other means, and that is used as a benchmark. A best practice is used to describe the process of developing and following a standard way of doing things that multiple organizations can use.

Blended learning
Online or technology-delivered instruction combined with face-to-face instruction.

Block of instruction
One or more related units or modules grouped to cover course major subject or task areas.

Certification
A formal written confirmation by a proponent organization or certifying agency that an individual or team can perform assigned critical tasks to prescribed standard. The team or individual must demonstrate its ability to perform the critical tasks to the prescribed standard before certification is issued.

Check on learning
A type of formative assessment of a learning objective. Examples may be a short quiz or a hands-on practical exercise, and could be written, verbal, or performed in a small group.

Classified military information
Information originated by or for the Department of Defense or its agencies or is under their jurisdiction or control and that requires protection in the interests of national security. It is designated TOP SECRET, SECRET, and CONFIDENTIAL.

Combined Arms Center (CAC)
The proponent for Army training and education development and critical operational lessons learned, CAC is responsible to support and integrate Army training and education across all cohorts in support of Army force generation (ARFORGEN).

Competency
A cluster of related knowledge, skills, and attributes that affect a major part of an individual's job (a role or responsibility), that correlates with performance on the job, that can be measured against accepted standards, and that can be improved via training and development.

Condition
Specifies the limits under which a behavior is performed. Conditions may include the use of specific equipment provided to perform a task during which the behavior will be demonstrated. Conditions may also be information provided to guide action a specific way.

Content validation
A type of formative evaluation and the process used to verify that the information in the lesson/course is technically accurate and integrates current and emerging doctrine. Optimally, content validations are conducted immediately after the components in each LSA are developed; therefore, content validations are performed incrementally.

Controlled unclassified information
Unclassified information to which access or distribution limitations have been applied in accordance with national laws, policies, and regulations of the originating country.

Course
A complete series of instructional units (phases, modules, and lessons) identified by common title and number consisting of curriculum inclusive of critical tasks or educational requirements to qualify a jobholder for a specific job or function (military occupational specialty (MOS)/area of concentration (AOC) skill level, skill qualification identifier, additional skill identifier (ASI), language identifier code (LIC), and skill identifier within the Total Army).

Course administrative data (CAD)
A TRAS document that is the proponent's initial estimate or projection of a course's administrative data and resource requirements; serves as a change document for submission of administrative and resource changes to a specific course or course phase; stimulates changes to the Army's institutional training management systems; and stimulates resource systems and processes needed to acquire the resource before the course implementation date.

Course content
Knowledge and skills, including proficiency levels, identified in the applicable training standard which will be taught. Adding or deleting tasks, or changing proficiency levels constitutes a course content change. Rearranging objectives, reallocating times within a course, and inserting technology or updated equipment used to teach course content, address how the course content is taught but do not change actual course content.

Course implementation
Course implementation begins when the first validation class starts.

Course Manager
The proponent course manager is the individual with overall responsibility for the designing, developing, resourcing, executing, and evaluating a course of instruction. The course manager is responsible for ensuring staff and faculty is qualified to present the course material. See TP 350-70-3, Figure B-3 for a detailed description of the role and functions of a Course Manager.

Curriculum
A course (or set of courses) and their content offered by a school. Curriculum is prescriptive and specifies what topics must be understood and to what level to achieve a particular grade or standard.

Design
A phase in the ADDIE process used to transform analysis data into a blueprint for learning products. Design produces the details of when, where, and how outcomes must be met. Outputs from the design phase then serve as the framework for the development phase of the ADDIE process.

Development
A phase in the ADDIE process used to convert the design into resident and non-resident learning products and components, such as lesson plans, student handouts, and media.

Educational outcome
Educational outcomes are the cognitive knowledge, skills, and attributes attained as a result of involvement in a particular set of educational experiences. Educational outcomes must be observable and measurable and must indicate the type and depth of learning individuals are expected to know or be able to do.

Enabling learning objective (ELO)
An ELO defines the skills, knowledge, or behaviors students must reach in order to successfully complete the TLO. ELOs allow the TLO to be broken down into smaller, more manageable objectives. An ELO supports the TLO. Each ELO measures an element of the TLO, and addresses skills or knowledge gaps. ELOs are identified when designing the lesson plan. ELOs are optional based on analysis of the TLO; however, when ELOs are used, there must be a minimum of two.

Evaluation
A phase in the ADDIE process. Evaluation is the quality control mechanism for learning product development. It is a systematic and continuous method to appraise the quality, efficiency, and effectiveness of a program, process, procedure, or product.

Experiential learning
Assumes learners bring experience and knowledge to the classroom. Learners construct knowledge by synthesizing their real-world experiences and their experiences in the classroom. Learners receive both formative and summative assessments from faculty and peers throughout the course. Experiential Learning creates learning that lasts by balancing both cognitive and affective domains. It allows learners to exercise critical reasoning and creative thinking by identifying problems and working collaboratively to develop possible solutions.

Formative assessment
A range of formal and informal assessment procedures employed by instructor/facilitators during the learning process in order to modify teaching and learning activities to improve learner attainment. Formative assessments monitor progress toward goals within a course of study. It typically involves qualitative feedback (rather than scores) for both learner and instructor/facilitator that focus on the details of content and performance.

Formative evaluation
The monitoring of a learning product as it proceeds through the ISD process to make sure the product achieves the desired outcome/objective. This is a check-on-development to control the quality of the learning products developed and their implementation.

Functional courses
Courses designed to qualify leaders, Soldiers, and DA Civilians for assignment to duty positions that require specific functional skills and knowledge.

Graphic Training Aid (GTA)
A product created to enable trainers to conduct and sustain task-based training in lieu of using extensive printed material or expensive equipment. GTAs may also increase performance during on-the-job training or as job aids.

Group size
Group sizes are established to make efficient use of facilities and resources, ensure transfer of learning, program classes to satisfy training requirements, determine instructor/facilitator requirements, evaluate training expansion capability, and manage class cancellation. Group sizes are established in coordination with the local manpower office.

Implementation
A phase in the ADDIE process. The actual conduct of learning using the validated learning products created during the design and development phases.

Individual critical task list
An ICTL is the list of critical tasks that job incumbents must perform to successfully accomplish their missions and duties. The ICTL is developed by the critical task and site selection board (CTSSB) from a list of all tasks identified as a result of a job analysis.

Individual training plan
The ITP is a long-range planning document that articulates the proponent's career-long training and education strategy for a MOS, area of concentration, or separate functional area.

Institutional training domain
The Army's institutional training and education system, which primarily includes training base centers and schools that provide initial training and subsequent professional military education for Soldiers, military leaders, and DA Civilians. The institutional domain includes initial military training, professional military education, Civilian Education System, and functional training for Soldiers and DA Civilians.

Instructional Design
The process of creating learning products that enhances the quality, efficiency, and effectiveness of education and training.

Instructional material
Material used by instructors/facilitators and/or learners in formal courses, including training aids, TOs, commercial publications, visual aids, etc.

Instructional strategy
Describes the process of organizing and specifying learning activities and content delivery. It is designed to achieve an overall aim of imparting knowledge using particular methods of instruction.

Instructional systems design (ISD)
The model for creating instructional experiences that make the acquisition of knowledge and skill more efficient, effective, and appealing. The Army ISD is based on the ADDIE process.

Instructor contact hour (ICH)
ICH is based on the course academic time and represents one instructor work hour during which an instructor/facilitator is in contact with a student or students and is conducting, facilitating, or performing instructor duties.

Interactive multimedia instruction (IMI)
The IMI is a group of computer-based training and support products. This includes source materials that are commonly used in IMI products, electronic products used for the delivery of or supporting the delivery of instruction, and software management tools used to support instructional programs. The IMI products include: computer aided instruction, computer managed instruction, interactive courseware, electronic publications, electronic testing, electronic guides and simulations (AR 350-1).

Job
A job is a collection of unique, specific, and related activities (tasks or skill sets) performed by a unique, defined set of personnel.

Job Aid
A supporting product that can be a checklist, procedural guide, decision table, worksheet, algorithm, or other device used as an aid in performing duty position tasks.

Knowledge
Information required to perform a skill or supported task. Knowledge is the basic building block of all learning.

Learning
Learning is a process of acquiring new, or modifying existing knowledge, behaviors, skills, values, or preferences and may involve synthesizing different types of information. Learning involves a change in the behavior of the learner as a result of experience. The behavior can be physical and overt, or it can be intellectual or attitudinal.

Learning objective
A three-part statement consisting of an action, condition, and standard. This statement clearly and concisely describes learner performance at the prescribed level of learning required to demonstrate competency in the instructional material. Learning objectives are derived from task/competency performance specifications. Objectives serve as the foundation for instructional design, provide the basis for instructional strategy decisions and criterion tests, establish clear and concise learner goals, and determine content.

Learning outcome
A statement that indicates the level and type of competence a learner will have at the end of a course. The specification of what a student should learn as the result of a period of specified and supported study.

Learning step activity (LSA)
LSAs are the foundation for a lesson. LSAs also provide a structured means to focus learning on a small part of what a student needs to learn, and provide the basis for identifying specifications, including such items as the method of instruction and resources required to present the lesson.

Lesson
A period of time where learning is intended to occur. During a lesson, learners are taught about a particular subject or taught how to perform a particular activity. A lesson provides the instructional content for a lesson plan.

Lesson plan
A lesson plan is the detailed development of information and resources used by instructors/facilitators to execute the instruction prescribed in one lesson within the prescribed time limits using the specified resources. A lesson plan includes the content and supporting information for only one lesson which supports the learning and assessment of one TLO.

Mandatory training
Training required on specific subjects as required by law, DoD, and/or HQDA. Mandatory training may apply to units, institutions, and civilians.

Media
Any means or instrument of communication (auditory, visual, or written) that is used as a part of an instructional sequence to demonstrate or clarify course content and to facilitate learning or increase comprehension of course material. Examples include video, printed material, and audio.

Method of instruction (MOI)
A type of activity used to facilitate the accomplishment of the learning objective(s). Specific methods require varying degrees of learner participation. Selection of the best MOI requires consideration of the learner, the content, the goals, the learning environment, the instructor/facilitator, and the available resources.

Module
A group of multiple related lessons that promotes efficiency in the course structure. In rare cases a module may be comprised of only one lesson based on a single TLO.

Phase
A major part of a course that may be taught at different locations. Phases are required as a necessary break-up of a course version due to time, location, equipment, facility constraints, or delivery options such as DL, IMI, resident, or any combination. For resourcing purposes, a phase is an instructional unit identified by a common course title and number consisting of curriculum inclusive of critical tasks or educational requirements constructed as a portion or segment of a course.

Program of Instruction (POI) Manager
The POI Manager has POI approval authority in TDC. POI approval is required prior to posting final versions in support of a course.

Portfolio Assessment
A type of assessment that considers a collection of work that demonstrates a student's activities, skills, and achievements to highlight his/her talents or show progress over time.

Professional military education (PME)
Progressive levels of military education that convey the broad body of knowledge and professional competence essential for the military professional's career progression.

POI
A TRAS requirements document which provides a specific description of course content, duration of instruction, types of instruction, and lists resources required to conduct the course/phase.

Proponent
Army organization or staff element designated by the HQDA DCS, G-3/5/7 that has primary responsibility for materiel or subject matter expertise in its area of interest or charged with accomplishment of one or more functions.

Quality Control
A management and employee responsibility by which process data are systematically gathered to determine product quality. Process standards are established and the data gathered are subjected to analysis. Quality control results are used to determine process changes, staff training requirements and administrative procedure improvements as necessary.

Reserve Component
The Reserve Component is made up of both the United States Army Reserve (USAR) and the Army National Guard (ARNG).

Rubric
A guide listing specific criteria for grading or scoring academic papers, projects, or tests. Rubrics are also used for assessing levels of learner achievement of competencies.

Self-paced learning
Individuals move through the course at varying rates according to parameters established during validation. Learners move through the course individually at their own speed and are not dependent on group times.

Seminar
An advanced course of study for discussion and research under the guidance of a recognized expert.

Skill
A skill designates one's ability to perform a job-related activity, which contributes to the effective performance of a task performance step. There are two types of skills: physical and mental.

Soldier Training Publication (STP)
A training publication that contains critical tasks and other information used to train all Army Soldiers to the same standards. It provides guidance on the conduct of individual Soldier training in the unit and aids all Soldiers in the training of critical tasks (AR 350-1).

Standard
The accepted proficiency level required to accomplish a task or learning objective. In Army learning, standard is a statement that establishes criteria for how well a task or learning objective is performed. The standard specifies how well, completely, or accurately a process is performed or product produced.

Student handout
A booklet, schematic, circuit diagram, table, or similar material that augments the study guide, work book, learner text, or otherwise supports course objectives.

Summative assessment
A process that concentrates on learner outcomes rather than only the program of instruction. It is a means to determine learners' mastery and comprehension of information, skills, concepts, or processes. Summative assessments occur at the end of a formal learning/instructional experience, either a class or a program and may include a variety of activities (for example: tests, demonstrations, portfolios, internships, clinical experiences, and capstone projects).

Summative evaluation
A process that concerns final evaluation to ask if the project or program met its goals. Typically the summative evaluation concentrates on the program of instruction and the learning products.

Synchronous learning environment
The synchronous learning environment supports communication in which interaction between the participants is simultaneous through two-way audio or video, computer document conferencing, or chat rooms (AR 351-9).

Terminal learning objective (TLO)
The TLO is the main objective of a lesson. The TLO describes in observable, measurable terms what the learner must do at the end of the lesson to demonstrate acceptable performance. A lesson has only one TLO. A TLO may be identical to the task/competency it covers. The learning level of the TLO is always equal to or at a higher level than the ELOs.

Test control
The application of security measures to protect tests and test items and related sensitive material from unauthorized disclosure from the time of their creation until they become obsolete or are destroyed.

Test validation
A process used to determine if a test successfully measures the intended objectives.

Total task inventory (TTI)
The total task inventory is a comprehensive list of all individual tasks an incumbent performs as part of a job. Critical tasks for the job are derived from this inventory.

Training Circular (TC)
A publication (paper or computer-based) that provides a means to distribute training information that does not fit standard requirements for other established types of training publications.

Training and Education Development
The process of developing, integrating, prioritizing, resourcing and providing quality control/quality assurance of the Army's training and education concepts, strategies and products to support the Army's training and education of Active Army and Reserve Component Soldiers, civilians and units across the institutional, self-development and operational training domains.

Training Development Capability
TDC is a web-based, CAC-approved, automated system used to develop, store, and manage learning products for all training domains.

Training Requirements Analysis System (TRAS)
TRAS integrates the training development process with programming, planning, budgeting, and execution system (PPBES) by documenting training strategies, courses, and related resource requirements. The TRAS integrates external resource acquisition systems for students, instructors, equipment and devices, ammunition, dollars, and facilities with the training development and implementation process. TRAS documents enable Army training institutions to plan and support the development and implementation of individual training courses (TP 350-70-9).

Training support package (TSP)
A complete, exportable package integrating training products, materials, and/or information necessary to train one or more tasks or competencies. The contents will vary depending on the training site and user. A TSP for collective training is a package that can be used to train critical collective and supporting critical individual tasks (including leader and battle staff).

Validation
The process used to determine if new/revised courses and training products/materials accomplish their intended purpose efficiently and effectively. It is the process used to determine if training accomplishes its intended purpose. Validation and revising training are continuous actions in the teaching/revising process of training improvement. Validation is of the training products themselves, not the training site.

Written test
Instrument used to sample each learning objective and, when necessary, performance objective knowledge components. Tests can be unit, module, block, or end-of-course tests administered in a formal testing mode during time allotted in the POI.

Section III
Special abbreviations and terms

This section contains no entries.

Section IV
Key links

Army Learning Content and Management Capability – Delivery Platforms
http://www.atsc.army.mil/tadlp/delivery/index.asp

Army Publications
http://armypubs.army.mil/index.html

Army Publishing Directorate
http://www.apd.army.mil

Army Training Network
https://atn.army.mil

ASSIST website, Defense Logistics Agency
http://quicksearch.dla.mil/basic_profile.cfm?ident_number=205464&method=basic

Army Training Support Center
https://www.atsc.army.mil

Asynchronous and Synchronous E-Learning, Educause Quarterly Number 4 (Stefan Hrastinski)
http://net.educause.edu/ir/library/pdf/eqm0848.pdf

Central Army Registry
http://www.train.army.mil/

Copyright Clearance Center
www.copyright.com

Council on Occupational Education
http://www.council.org/

DefenseImagery.mil (Defense Automated Visual Information System and Defense Instructional Technology Information System)
http://www.defenseimagery.mil/index.html

Design and Teach a Course – Teaching Excellence and Educational Innovation (Carnegie Mellon University)
http://www.cmu.edu/teaching/designteach/index.html

Designing Test Questions (University of Tennessee at Chattanooga)
http://www.utc.edu/walker-center-teaching-learning/faculty-development/online-resources/test-design.php

HR Guide to the Internet: Job Analysis: Overview
http://www.job-analysis.net/G000.htm

Instructional Strategies Online
http://schools.spsd.sk.ca/curriculum/instructionalstrategies/

Inter-service Training Office
http://www.tradoc.army.mil/g357/tid/itro/index.htm

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http://www.flaguide.org/extra/download/cat/perfass/perfass.pdf

The Army Distributed Learning Program
http://www.atsc.army.mil/tadlp/content/index.asp

TRADOC Graphic User Interface
http://www.atsc.army.mil/itsd/imi/GUI.asp

TRADOC Publications
http://www.tradoc.army.mil/tpubs/index.htm

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TRADOC Quality Assurance Program
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Training and Education Developer Toolbox (TED-T)
https://atn.army.mil/TreeViewCStab.aspx?loadTierID=2904&docID=35

Training Evaluation Document (DI-SESS-81524B
www.atsc.army.mil/itsd/imi/documents/DataItemsDesc/DI-SESS-81524B.pdf

United States Copyright Office, Library of Congress
http://lcweb.loc.gov/copyright

United States Distance Learning Association
www.usdla.org

United States Patent and Trademark Office
www.uspto.gov